

SCHOOL METHOD.

JARROLD'S Teachers' and Pupil Teachers' Series.

SCHOOL METHOD.

NOTES AND HINTS

FROM LECTURES DELIVERED AT THE BOROUGH ROAD TRAINING
COLLEGE, LONDON.

BY

F. J. GLADMAN, B.A., B.Sc. (LOND.).

Late Superintendent of the Central Training Institution, Melbourne; and formerly Head Master of the Model and Practising Schools, Borough Road; Normal Master in the Borough Road Training College; and Inspector of Schools for the British and Foreign School Society.

Designed for the use of Pupil Teachers, Young Teachers and Students, and framed especially with a view to the present requirements of Queen's Scholarship and First Year Certificate Examinations.

ONE HUNDRED AND FIRST THOUSAND.

LONDON :

JARROLD AND SONS, 10 AND 11, WARWICK LANE.
[ALL RIGHTS RESERVED.]

P R E F A C E .

IN this work the writer has endeavoured to summarize the most important points in the "School-Management Lectures," which he has delivered to the Students at the Borough Road Training College, and to arrange them in such a form as is likely to make them useful to Pupil Teachers and Students, and young Teachers generally.

It is essentially a book on METHOD ;—*how* to teach, *how* to obtain and keep order, *how* to reward and punish. Some subjects which occupy a leading position in complete treatises on School-Management, and properly so, are here passed over in silence, or relegated to a secondary place. Theory is not altogether ignored, but it is subordinated to practice. The attention of the reader is directed to the actual work of controlling and teaching a class, and the methods by which he may do this.

Much of what is herein contained, was originally used in dealing with Pupil-Teachers, and their needs have been kept in view in all that is written. They will find detailed directions for their guidance in teaching all the

ordinary school subjects, and it is hoped that these will help to render their work intelligent and to some extent easy. The Appendices have also been drawn up chiefly for them. But elder Pupil Teachers should read the whole work, *and think about it.*

The lectures on Oral Teaching, Questioning, Notes of Lessons, Reading, Spelling, Writing, and Arithmetic, were delivered to Students during their first year of residence, and these subjects still form the first year's course in School-Management. The lectures on Geography, History, Grammar, School-Discipline, Rewards and Punishments, were prepared for second-year Students, who have also to take up the subjects of Organization and Registration. The two last mentioned have been treated cursorily, for reasons stated in the proper place. But, with these exceptions, all the subjects which are included in the School-Management syllabus for candidates for the "Teacher's Certificate," are treated with sufficient fulness, to enable the thoughtful practical teacher to answer any ordinary question that is likely to be set.

The peculiar views of the author on certain points, and his special methods in all, have been put forward with an appearance of dogmatism which can scarcely be avoided when one is speaking '*ex cathedra.*' He does not imagine, however, that his plans are perfect, and in

this, he is sure that many thoughtful and successful teachers will agree with him. For we travel by different roads to reach the same goal, and each of us, provided he reach it, is inclined to think his own way to be best.

The work aims at being suggestive rather than exhaustive ; the author wishes young teachers to *think for themselves* about the matters which he has laid before them ; if they are to become high-class teachers, they must exercise independent thought. -

The book has been drawn up during the last few weeks of the writer's sojourn in England, and he now sends it forth with the fervent hope that it may, in some measure, help forward the work in which he has been so long engaged, and which he has learned to love.

C O N T E N T S.

| | | PAGE |
|--|-----|------|
| | ... | II |
| SCHOOL DISCIPLINE | ... | 11 |
| ORAL TEACHING—NOTES OF LESSONS—QUESTIONING | ... | 17 |
| READING | ... | 37 |
| SPELLING | ... | 50 |
| WRITING | ... | 59 |
| ARITHMETIC | ... | 71 |
| GEOGRAPHY | ... | 99 |
| HISTORY | ... | 109 |
| GRAMMAR | ... | 118 |
| ORGANIZATION | ... | 131 |
| REGISTRATION | ... | 132 |
| REWARDS AND PUNISHMENTS | ... | 133 |
| APPENDIX :— | | |
| A.—NOTES OF LESSONS. | | |
| 1. (a) TEACHING NOTES—MAGNETISM | ... | 144 |
| 2. (a) ,, ,, AN INSECT | ... | 148 |
| 1. (b) FULL NOTES THE SPIDER | ... | 149 |
| 2. (b) ,, ,, THE PUMP | ... | 152 |
| 3. (b) ,, ,, ECLIPSES | ... | 154 |
| B.—CRITICISM | ... | 157 |
| C.—NOTES ON EXAMINATIONS | ... | 159 |
| D.—HINTS FOR TEACHERS IN THE BOROUGH ROAD PRACTISING SCHOOL | ... | 165 |

For Qualifications and Certificates of Pupil Teachers at Admission and during their Engagement, the Syllabus for Queen's Scholarship, etc., the reader is referred to the "NEW CODE REGULATIONS, by the Right Honourable the Lords of the Committee of the Privy Council on Education." Issued annually, price 2½d.

SCHOOL METHOD

SCHOOL DISCIPLINE.

ALL the means and appliances which the teacher uses to secure obedience, to maintain order, and to foster a habit of application, pertain to discipline. In this aspect, discipline stands for the moral government of the school.

Discipline is not to be confounded with "drill." Drill is an aid to discipline. "Good order," "attention," "steady work," "good conduct," are *ends* at which discipline aims. Discipline is the power which secures these desirable results.

The functions of the teacher and disciplinarian do not in strictness coincide. The one is an *impartor of knowledge*, the other is *a governor*.

But we find in practice that the teacher (and the teacher of large classes especially,) must also possess disciplinary power, if he is to exercise his own special function with success.

School Value of Discipline. (1) It renders school-work possible.

Without order and obedience to rule, work in school would be impracticable.

- (2) It is necessary for the teacher's own comfort and peace.
- (3) It is a satisfaction to the pupils.

Boys themselves, whatever may be said of them, do in their hearts like to be well governed and managed.

(4) It results in a *habit* of order and submission to rule, and is thus the foundation of a disciplined life.

It has been well observed that the difference between a useful life, and a life which is loose and unsteady, consists in this, that the one is subject

to law and obedient to duty, whilst the other has no law and no acquired habit of obedience to regulate its action.

Habits are of slow growth. A course of conduct must be persevered with uniformly in order that habit may grow vigorously. Hence one necessity for regularity in applying the rules of the school.

(5). It thus becomes an aid to intellectual improvement and to moral growth.

Some marks of good Discipline.

(a) In its Exercise. (1) It is *regular*, without fitfulness, not sometimes strict, and at other times loose.

(2) It is *impartial*, there is no manifest favouritism.

(3) It is *kind*. (Do not on this account think that the disciplinary process is always and at all times *pleasant* to those who come under it).

(4) It is *strong*.

(5) It is *discriminative*, not hard and mechanical.

(6) It is *thorough*, descending to points of detail.

(b) In its school results. (1) The teacher will *rule without difficulty*.

(2) The pupils will be *diligent* and active.

(3) Work will be *continuous, quiet, and orderly*.

(4) All movements will be executed with *sprightliness and quiet*.

(5) There will be a "*good tone*" in the school, and this will be evinced by *honesty* in the work, and a general feeling of *responsibility*. The moral atmosphere of the school will be healthy.

It is the school tone which rules, and the teacher governs by acting upon it. His action, long continued, becomes creative, so that the teacher's characteristics manifest themselves in the "*tone*" he succeeds in creating. "As is the teacher, so is the school."

(c) Its permanent influence on character lies, to a large extent, out of the teacher's view. Notice, however, what has been said on this matter in the last paragraph.

Tests by which a Teacher may gauge his own power as a Disciplinarian.

Do your pupils habitually strive to meet your wishes? Have you any difficulty in getting your directions carried out? Is a hint of your wish sufficient to secure instant and full obedience? Can you secure the maximum amount of honest effort from your pupils with the slightest possible expenditure on your side?

Few earnest teachers, if any, succeed in fully satisfying themselves on this matter. Yet it is astonishing how one's power grows, if the aim be definite, and the action steady and persistent.

Further practical Hints on Discipline.*

I. *Law should be supreme.* The teacher administers the law, but he, in common with all in the school, should be subject to it.

In administering rules there must be no caprice and no irregularity. Intermittent anarchy and despotism must be avoided.

II. *Rules should be few and well considered.* No rules should be made which cannot be enforced. Consequently, rules should only be made for those subjects and matters which can be supervised.

It does harm to make a regulation which is inoperative, or which has to be reconsidered. Young teachers frequently need a word of caution in this matter.

III. *Every one should know his duty, and that with respect to all the details of school-work.* Every pupil, at every time, should clearly know what is expected of him.

He should always have "*something to do.*" It is best when this "something" requires mental or bodily activity on his part; and no better rule for securing good order can be given than "*Keep every boy at work.*" But there are times when the immediate work is over: e.g., when the boy has finished his writing or his sum. It is precisely at such moments that looseness is apt to creep in, and it is imperative, in the interests of good order, that at these times the pupil should know exactly *what to do* with his book or slate, how he should stand or sit, where his hands should be, and the like. "*Sitting still*" or "*standing still*" may be part of the school routine, but "*doing nothing*" should never be recognized as legitimate work.

* An attempt has been made to collect in separate paragraphs those points which are nearly related; but the connection is not very close in all cases, and in paragraphs V. and VI. some matters appear in a subordinate place, although they are quite as important as others which have been placed at the head of the various paragraphs.

IV. *Supervision should be regular and thorough.* There should be no escape from the consequences if law be violated. Detection should be certain, and every infraction of rule should receive its proper punishment.

It must be confessed that it is difficult, nay, even impossible, to carry out this regulation in its entirety. But the disciplinarian ought, nevertheless, to aim resolutely at securing the nearest possible approximation to the standard here set up.

V. *There should be no fuss.* Talk as little as possible about order. Do not ask or beg for order.

Avoid such expressions as "I will have order," "I mean to have you behave properly," and the like.

Never give an order without a settled determination to be obeyed.

After giving an order, run your eye over the class, and wait to see that your directions are exactly carried out before proceeding to the next order.

Let your orders be definite.

This is necessary so that there may be no mistaking your meaning. Note also that this condition will frequently be violated if you proceed to a second order before the first is executed.

Do not assume the possibility of contradiction or of disobedience.

Inexperienced disciplinarians not infrequently make a great mistake here, and induce the very evil which they anticipate as a consequence.

Avoid threatening.

Do not repeat your commands.

If you are in earnest and have spoken with sufficient force, speaking once ought to be enough.

Speak in a quiet firm tone. Try to govern without saying much, or talking loudly.

If your voice and manner be habitually quiet, a slight alteration in tone, or an additional "sharpness of manner" will be an effective means of arousing attention. Many young teachers deprive themselves of the aid here indicated, by continually adopting a severe manner and a loud magisterial tone.

VI. *The Teacher's manner* should be courteous and kind, yet magisterial.

His bearing should be dignified and self-respectful, such as to check any approach to undue familiarity in school.

Carefully avoid oddity in dress or demeanour. Treat children respectfully.

The writer believes most thoroughly that the teacher may come to be regarded as a kind of "elder brother" as well as a master by boys who have been with him long enough to know him. This desirable state cannot be reached however, by that teacher who looks on the pupil as a species of inferior animal, and who treats him accordingly. The teacher should remember to what extent and in what way he was influenced when he was a boy.

Avoid jocularity in managing a class.

Some teachers can use a joke well in dealing with boys. But this power is not so common as might be supposed, and is very liable to misuse.

Never adopt a sneering or sarcastic style.

Besides being in bad taste, this is cowardly, for the pupil cannot retaliate. The sufferer is likely to lose his self-respect, and his companions may probably imitate their teacher in annoying him.

Never assume fictitious perfections.

Do not pretend to be what you are not, nor to know that of which you are ignorant.

Avoid putting forth all your strength. Try always to keep power in reserve.

It commonly happens that those who are newly placed in authority, delight in the exercise of their full prerogatives. The young pupil-teacher is apt to send his pupils out to the master for comparatively trifling offences, and after that, he has no more that he can do, even if a more serious offence should arise.

Never court popularity by tampering with rules, or pandering in any way to what is wrong.

Do not truckle to public opinion when you are convinced it is misdirected. Most men who exercise large influence for good, have lived through a certain amount of obloquy and unpopularity. Honesty and consistency are sure to command respect in the long run with boys as well as with men.

The Discipline of the School depends upon the personal character of the Teacher.

He ought to inspire in the pupils the belief that he is superior to them in every way; wiser, better, and more powerful; that he is aiming at the general welfare of the school, as well as of the individual scholars; that his plans have been wisely laid with a view to secure this end, and that it will be useless for any one to attempt to thwart him. He should have "the spirit of power, and of love, and of a sound mind" (2 Tim. i. 7), and his pupils should feel that he has it.

Some of the more important desiderata in the Character and Habits of the Teacher are :—

Cleanliness, neatness in dress, methodical habit, cheerfulness, good-temper, considerateness for the feelings of others, discretion, self-control, quickness of eye and of ear, energy, quiet firmness, organizing power, strict integrity, and the earnestness which arises from a due sense of the importance of his work and his responsibility to God.

It is probable that the enumeration of such a list, coupled with the knowledge of our own deficiencies, may lead us to question our fitness for the work we have undertaken. But we should not let the standard of "what we ought to be" be degraded to fit in with "what we are." We are more likely to achieve high results if we aim high, even if we fall short of our intention.

| "..... Who aimeth at the sky,
| Shoots higher much than he who means a tree."—*Herbert.*

Those who feel their weakness, should set themselves earnestly to remedy their shortcomings. By persistent endeavour it is possible to develop strength in those faculties which need it.

ORAL TEACHING.

Meaning of the Expression. (1) There is a sense in which this term may be applied to the entire range of school-work, inasmuch as the teacher must test the knowledge of his pupils, correct their mistakes, and supply information in all the subjects which are taught in school.

(2) More commonly, however, the phrase is used in a restricted sense, and is applied to those lessons in which the teacher supplies the matter from his own stores of information, and leads the thoughts of his pupils in the direction he desires.

As such lessons are usually given on a gallery, and to large classes, this method of instruction is frequently spoken of as "*The Gallery Lesson*," or as "*Collective Teaching*."

(3) This mode of teaching is often used in "*Lessons of Instruction*;" those lessons which have for their principal object the increase of the pupils' store of actual knowledge. But it is pre-eminently the method employed by the teacher in "*educating*" his scholars.

After all that has been said and written upon the subject of *Instruction* as contrasted with *Education*, it may seem to be superfluous to bring it under notice again. But as this work is intended for young teachers, it appears to be desirable, in their interest, to direct their careful attention to the fundamental difference between the two. *Instruction* is the process of "building up," (Lat. *in-struo*), of storing the mind with information, of supplying from the outside the materials which are needed. It is an essential part of the teacher's work, and he must devote long and earnest thought to forming his plans for "instructing" his pupils. It will be necessary for him to *choose* the facts which he wishes to teach, to *arrange* them so that they may be easily associated, and to *repeat* his instructions from time to time, so that they may find a permanent place in the minds of his scholars. In its crudest form, instruction degenerates into "*cramming*." But, in true instruction the mental food is assimilated, and gives increased intellectual power, whilst in "*cramming*" the mind is

overloaded with ill-arranged and probably indigestible facts, which render it confused and dull, so that the facts themselves remain impressed on the mind but for a limited time, and are scarcely available for actual use.

Education (Lat. *e-duco*) is the process of "leading out," or of "drawing out" the powers of the pupil. Its object is to give him the ability of using these powers *for himself* and from within, so that, in the end, he may become independent of the teacher. This also is an essential part of the teacher's work, and will make even greater demands upon his skill than the work of instruction does. He must try to discover the natural endowments, and must take measures for developing those which it is desirable to strengthen. "*Exercise is the condition of acquirement*" in this region. Therefore the teacher lays his plans so as to provide each natural power with suitable exercise, *sufficient* to ensure its proper development, *graduated* so as to suit the individual capacity, *not excessive*, so as not to strain it unduly.

In these two departments, the teacher finds work for a life-time. The earnest and thoughtful young teacher, who has high aims, must labour on, sometimes painfully and frequently through failure, before he attains the modicum of skill which renders his work agreeable. But "*exercise is the condition of acquirement*" here also. Steadiness of aim, and ceaseless striving give increasing and still increasing power. Although no teacher ever reaches perfection in his work, yet he becomes more inventive, more "*fertile in resource*," and his plans work with less friction as his facility is increased by practice.

The Teacher must have acquired fair skill before he can give a good Gallery Lesson. Far greater power is needed in this exercise, than in superintending the more mechanical work of the school.

No other form of school work makes such demands upon the teacher. He is thrown upon his own resources, and the success of his lesson depends upon himself. He attempts to interest, instruct, and educate a considerable number at once, and to maintain these processes for a lengthened time. So that his faults become more apparent, whilst his power and skill have the fullest opportunity of manifesting themselves.

He should have a full knowledge of the needs as well as of the capacities of his class, and must carefully adapt his lessons to them. He must know his subject thoroughly, and must be skilled in applying the necessary devices for arresting and maintaining attention. His thoughts must be continually active, and yet he must keep a tight rein over them to prevent undue discursiveness. He must also have a power of readily seizing on any circumstance which may arise during the lesson, and of forcing it to be of service in gathering the ends he has in view.

Class Teaching, an essential part of the Teacher's Examination. Pupil Teachers are required to show increased skill in this exercise from year to year, and the Inspector awards them a mark in accordance with his estimate of the mode in which they acquit themselves.

Preparing and giving a Collective Lesson forms an essential part of the examination for the Teacher's Certificate.

More marks are obtainable for this exercise than for any other subject of examination. This arrangement is just, for the Gallery lesson ought to show more completely than any other test, the fitness of the teacher for his special work—teaching.

Indirect value of Collective Teaching. The other work of the school is improved by proper attention to the Collective Lessons.

The ability of the teacher is strengthened and rendered more versatile by the practice, whilst the intellectual faculties of the pupil are quickened and developed. The increased power and vigour of both are available in attacking the other subjects of the school course.

Actual acquirement in one department tends to make progress in other branches more easy. To take a common illustration:—In the simplest and most elementary Gallery Lesson on a “common object,” the children are taught to use their organs of sense; to see, feel, smell, or taste.* By these processes they acquire certain ideas, which, however, they are frequently unable to express in words. Words are now given to them by the teacher which embody the idea with exactitude. These new words being introduced in such a connection as to show the necessity for their employment, and in such a manner as to render their exact meaning apparent, are likely to become part of the pupil's vocabulary. When therefore he meets them in print, they will not be unfamiliar; thus, the Gallery Lesson may be an aid even to the mechanical process of reading.

“**Induction**” in Logic, is that form of the reasoning process, by which we ascend from the observation of individual facts, to the establishment of general laws.

* When we reflect upon the amount of loose thinking and of absolute error, which have originated in hazy, inexact, incomplete, or erroneous perception, we shall not be inclined to despise such simple lessons as these. The right interpretation of the impressions conveyed to the mind by the senses, lies at the base of all knowledge.

In this process, facts must be observed, collated, and classified.

A general law which governs the facts is then arrived at tentatively, by a "skilful guess."

The truth of the generalization is tested by applying it to new cases. Much modification is commonly needed before a "law" of universal application can be formulated.

"Deduction" is that form of reasoning, by which we descend from general to particular propositions.

"Inductive Teaching" is the name given to that mode of instruction, in which *the pupil is led to discover truth for himself*. It is the highest form of teaching, and is that which is most usefully employed by the teacher in *educating* his pupils.

In it, the mind of the pupil is led through processes analogous to those by which scientific laws are arrived at.

The chief practical work of man, as a thinking animal, consists in making inductions (and deductions), by which he may direct his conduct. But these are liable to be false, especially if they be arrived at hastily. It therefore becomes the duty of the educator to aim at strengthening those faculties, which, if properly used, enable a man to arrive at sound conclusions.

The degree of skill which different teachers exhibit in employing inductive teaching varies greatly. One man is obliged helplessly to *tell* his pupils that which his more skilful brother will *elicit* from them with ease. Very much depends upon the facility with which the teacher connects facts and reasons in his own mind, and the readiness with which he can lead his boys to do so. And this is not so much a matter of natural endowment as of acquired skill and of habit.

For example, one teacher will *tell* his boys that "*the Amazon flows eastward*," whilst another will point out the position of the Andes in which the river rises, and then ask in which direction it is likely the river will run, and thus *elicit* the correct answer.

Again, one man finds it necessary to tell his pupils that "*Ancient Greece and Italy were composed of numerous independent states*." Another teacher after calling attention to the mountainous character of the countries, and to the difficulty of communication, especially in early times, would lead his boys to see the likelihood of there being many states in these countries.

And once more:—Let us suppose a class of boys who have fair skill in multiplication and division. We will propose this problem to them; "*If 25 horses cost 750 guineas, how much will 15 cost?*" Probably almost all, if not quite all the boys, will be unable to solve

the question at once. Now a weak teacher will “*tell them how to do it,*” and be well satisfied if they arrive at the correct solution. A good teacher might go to work in this way :—

| | | | | |
|--|-------|---|---|--------|
| <i>If 2 horses cost 20 guineas, how much would 1 cost?</i> | | | | |
| „ 2 | „ 50 | „ | „ | I „ ? |
| „ 3 | „ 60 | „ | „ | I „ ? |
| „ 5 | „ 750 | „ | „ | I „ ? |
| „ 15 | „ 750 | „ | „ | I „ ? |
| „ 25 | „ 750 | „ | „ | I „ ? |
| <i>If 1 horse cost 25 guineas, how much would 2 cost?</i> | | | | |
| „ 2 horses | „ 50 | „ | „ | I „ ? |
| „ 2 | „ 750 | „ | „ | 3 „ ? |
| „ 5 | „ 750 | „ | „ | 3 „ ? |
| „ 15 | „ 750 | „ | „ | 6 „ ? |
| „ 25 | „ 750 | „ | „ | 3 „ ? |
| „ 25 | „ 750 | „ | „ | 6 „ ? |
| „ 25 | „ 750 | „ | „ | 15 „ ? |

When boys can be led to think out a result, it is generally better to question it out of them. The process may take a considerable time, but from an *educational* point of view, such needful time is time well spent.

But there are cases in which the inductive method can scarcely be employed at all, and others in which it is absolutely inapplicable. Teachers who are required to give a “Lesson of Information,” in which many new facts are to be taught, will do but little with their subject if they employ the inductive method largely. They must “*instruct*” their pupils (*see p. 17*) in this case. If too, they are required to teach the facts of the history of a certain period to boys who have no previous knowledge of the subject, the inductive method is altogether inapplicable. No amount of inductive teaching, apart from previous knowledge, will lead boys to find out that “*the battle of Agincourt was fought in 1415,*” or that “*The name of the largest town (city) in Lancashire is Manchester.*” Such facts must be *told* to the pupils, they cannot be properly *educed*. Yet opportunities for employing the inductive method will almost certainly arise during the course of every lesson. But the teacher must not be drawn off from the purpose with which he started. The question really resolves itself into a matter for the teacher’s discretion and skill: “*What do I desire to teach?*” “*How much can I educe?*” “*What ought I to tell?*”

“Socratic Teaching,” is thus named from the celebrated Greek philosopher, Socrates, who was put to death by the Athenians, on a charge of impiety, B.C. 399. It does not appear that he committed any of his teachings to writing, so that we are indebted to his disciples, Xenophon and Plato, for our

knowledge of the philosopher and of his method. From their writings, we learn that Socrates was accustomed to expose a fallacy or to inculcate a truth, by propounding a series of skilfully framed questions. These would follow in such a manner, that in the end, *the respondent would be led to the conclusion at which Socrates desired him to arrive*, and this, *without any direct instruction from the philosopher*. So that the ancient "Socratic Teaching" is the same in principle as the modern "Inductive Teaching." Two examples of his method are as follow:

Dialogue from Plato, between Socrates, Meno, and a Slave-boy, extracted by permission, from a little work by Mr. Fitch, entitled the "The Art of Questioning."

The object of Socrates in this case is to convince Meno that the being aware of one's own ignorance is better than being puffed up with a false idea of one's knowledge.

Socrates had the reputation of being a very great teacher, yet he never lectured nor preached. He had not even a code of doctrine or of opinion to promulgate. But he lived in the midst of a clever, cultivated, yet somewhat opinionated people, and he made it his business to question them as to the grounds of their own opinions, and to put searching and rigid enquiries to them on points which they thought they thoroughly understood. He believed that the great impediment to true knowledge was the possession of fancied or unreal knowledge, and that the first business of a philosopher was, not to teach, but to prepare the mind of the pupil for the reception of truth by proving to him his own ignorance.

Now as Socrates never lost sight of the main point, and had a remarkable power of chaining his hearer to the question in hand, and forbidding all discursiveness, the end of the exercise often was, that the pupil, after vain efforts to extricate himself, admitted that he could give no satisfactory answer to the question which at first seemed so easy.

I will give you a translation of one of Plato's dialogues, in which this peculiar method is illustrated.

There was one of the disciples of Socrates, named Meno, who had been thus probed and interrogated until he felt a somewhat uncomfortable conviction that he was not so wise as he had thought; and when he complained to the philosopher of what he called the merely negative character of his instruction:—

'Why, Socrates,' said he, 'you remind me of that broad sea-fish, called the torpedo which produces a numbness in the person

who approaches and touches it. For, in truth, I seem benumbed both in mind and mouth, and I know not what to reply to you, and yet I have often spoken on this subject with great fluency and success.'

In reply Socrates says little, but calls to him Meno's attendant, a young slave-boy, and begins to question him.

'My boy, do you know what figure this is?' (*Drawing a square upon the ground with a stick.*)

'Oh, yes. It is a square.'

'What do you notice about these lines?' (*Tracing them.*)

'That all four are equal.'

'Could there be another space like this, only larger or less?'

'Certainly.'

'Suppose this line (*pointing to one of the sides*) is two feet long, how many feet will there be in the whole?'

'Twice two.'

'How many is that?'

'Four.'

'Will it be possible to have another space twice this size?'

'Yes.'

'How many square feet will it contain?'

'Eight.'

'Then how long will the side of such space be?'

'It is plain, Socrates, that it will be twice the length.'

'You see, Meno, that I teach this boy nothing, I only question him. And now he thinks he knows the right answer to my question; but does he really know?'

'Certainly not,' replied Meno.

'Let us return to him again.'

'My boy, you say that from a line of four feet long, there will be produced a space of eight square feet, is it so?'

'Yes, Socrates, I think so.'

'Let us try, then.' (*He prolongs the line to double the length.*)

'Is this the line you mean?'

'Certainly.' (*He completes the square.*)

'How large is become the whole space?'

'Why it is four times as large.'

'How many feet does it contain?'

'Sixteen.'

'How many ought double the square to contain?'

'Eight.'

After a few more questions the lad suggests that the line should be three feet long; since four feet are too much.

SCHOOL METHOD.

'If, then, it be three feet, we will add the half of the first line to it, shall we?'

'Yes.' (*He draws the whole square on a line of three feet.*)

'Now, if the first square we drew contained twice two feet, and the second four times four feet, how many does the last contain?'

'Three times three, Socrates.'

'And how many ought it to contain?'

'Only eight, or one less than nine.'

'Well now, since this is not the line on which to draw the square we wanted, tell me how long it should be.'

'Indeed, sir, I don't know.'

'Now observe, Meno, what has happened to this boy; you see he did not know at first, neither does he yet know. But he then answered boldly, because he fancied he knew, now he is quite at a loss; and though he is still as ignorant as before, he does not think he knows.'

Meno replies, 'What you say is quite true, Socrates.'

'Is he not, then, in a better state now, in respect to the matter of which he was ignorant?'

'Most assuredly he is.'

'In causing him to be thus at a loss, and in benumbing him like a torpedo, have we done him any harm?'

'None, certainly.'

'We have at least made some progress towards finding out his true position. For now, knowing nothing, he is more likely to enquire and search for himself.'

The next is a dialogue between Socrates and Lamprocles, and consists of fragments from Book II., chap. 2, of Xenophon's 'Memorabilia of Socrates.' It affords a specimen of the positive side of the teaching of Socrates.

Socrates, having on one occasion learned that Lamprocles his eldest son had been insolent to his mother:—

'Tell me, my son,' said he, 'do you know any men who are called ungrateful?'

'Yes, indeed,' replied the youth.

'Have you considered then whether those whom they call by this name, act in any special way?'

'Certainly,' said he, 'they call those ungrateful, who, when they have received a benefit, do not make a return when they are able.'

'In your opinion, then, do they class those who are ungrateful with those who are unjust?'

'Certainly,' said he.

ORAL TEACHING.

'So that if this be the case, would not ingratitude seem to be a kind of injustice?'

Lamprocles agreed.

'Then would not any one who, in proportion as he had received greater benefits, did not give gratitude in return, be more unjust to the same extent?'

He assented to this also.

'Whom then,' said he, 'shall we find benefited to a greater degree than children by their parents?'

* * * * *

[*Socrates then recounts some of the benefits which parents confer on their children.*]

To this the young man said, 'But, in truth, even if she has done all these things, and others also many times more numerous than these, no one could endure her scolding. She says such things as a man would not wish to hear in all his life.'

[*Xanthippe, the wife of Socrates, has the reputation of having been a thorough scold.*]

'But' said Socrates, 'do you consider how many things hard to bear you have caused to her both in word and in actions, through being ill-tempered from childhood, and how many times you have caused her sorrow through being ill?'

[*The youth excuses himself further, and Socrates resumes:—*]

'But are you angry, knowing well that the things which your mother says to you, she says not only meaning no harm, but even wishing that good may happen to you more than to any one else, or do you imagine that your mother is ill-disposed to you?"

'No, indeed,' said he, 'I do not think this, at least.'

And Socrates said, 'Therefore, do you not say that she is hard to put up with, although she is well disposed to you, and as careful as she possibly can be of you, both when you are ill how you may be well, and also that you may be in want of nothing which is necessary?'

* * * * *

'I think on my part if you cannot put up with such a mother, that you are unable to put up with what is good.'"

[*Socrates having thus led his son to see the impropriety and wrong of his conduct, goes on further to inculcate respect and regard for parents.*]

Necessity for preparation. As Collective Teaching is so important, and yet so difficult, it follows that the teacher should always prepare his lessons before he gives them. It is not likely

that any teacher, however skilful and well-informed he may be, will do so well without preparation as with it, and certainly, the immature teacher cannot do justice to his subject or to his class without it.

We might as soon expect to find a *preacher* who presents himself to his audience without thinking of his sermon beforehand, or an *advocate* who stands up to argue in a case without studying his brief, as to find a teacher who attempts to give a lesson without preparation. They who lead the thoughts of others ought to think how they may best do their work.

This duty is neglected sometimes, and the excuse is urged that the teacher knows all about his subject, and that the mental stature of the pupils is small. *But can he adapt his teachings to the mental requirements of his boys? Will he do as much good without thinking over his lesson as he will if he prepare it carefully? Is he indeed sure that he does really know so much about it?* A very little reflection will lead the honest teacher to prepare his lessons habitually, and all the more if there be a great intellectual gap between him and his pupils.

The teacher ought to make himself well acquainted beforehand with the details of the subjects which he has to teach, even to the reading lesson. All his work will be more satisfactory to himself and more useful to his pupils, if he teaches in accordance with a pre-arranged plan.

NOTES OF LESSONS.

Teachers in actual work commonly draw up "*Teaching Notes*," to serve for handy reference before and during the lesson.

Such notes, in the writer's case, consist almost entirely of the facts of the lesson, arranged in what he conceives to be their natural order. They are almost an exact transcript of what usually appears on the black board at the end of the lesson. Any apt illustration that presents itself to the mind as the lesson is prepared, or any other noteworthy point should be entered for the teacher's guidance.

These notes, if kept in a book, serve with a little preparatory study, for lessons at a future time to new generations of school-boys.

Pupil teachers and students are required to draw up "*Full Notes*" of a lesson. These are more elaborate than the "*teaching notes*" just mentioned. The "*Full Notes*" ought to show—1. *What the matter of the lesson is;* 2. *How the matter is arranged;* 3. *The method by which the teacher proposes to teach it.* The notes as a whole should show the entire lesson, so that a skilled inspector, from a perusal of them, may

discover the teacher's knowledge of facts, and his power of selection and thoughtful arrangement, and may form an approximately correct idea as to his acquaintance with the methods of interesting the pupils and of imparting knowledge.

Hints on Drawing up "Full Notes" of a Lesson.

No general plan can be laid down in detail, which will be suitable for all cases. In preparing, as in giving a lesson, the teacher must modify his methods according to circumstances.

After the subject of the lesson has been chosen, the teacher must consider the age and capabilities of his class. This will influence his decision as to what he ought to teach, how much he can teach well in the allotted time, and how he can best teach it.

Choose suitable matter. Let the matter of the lesson be new and interesting if possible, but let it always be chosen for its utility and its suitableness to the wants of the children. [It need hardly be stated, that a lesson which would be fitted for one class, may be altogether unsuitable for another.]

The matter should be sufficient in quantity, but not superabundant. Do not attempt to crowd into your lesson all that you can say on the subject, but choose such facts as will best serve your purpose, and only so many as you can teach thoroughly in the allotted time. [Students frequently attempt to teach more than they can teach well in a single lesson.]

Arrange the matter in paragraphs, each of which should be complete in itself, and of but moderate length. The paragraphs should follow one another in a natural way, and they should not be too numerous. In giving the lesson, the matter in each paragraph should be taught and recapitulated separately as though it were the lesson for the time. This "recapitulation of parts" enables the teacher to make sure of his ground as he goes on, and the final recapitulation of the whole lesson will enable him to determine whether it has been comprehended in its entirety or no.

Words to be spelled or explained, etymologically or otherwise, should be indicated by underlining in various ways.

A sketch of the lesson for the black board, sufficient to recall the lesson to memory as we recapitulate, should also appear. It is generally desirable to enter this abstract upon the board as we proceed, or this may sometimes be done when we recapitulate. Comparatively few young teachers use the black board well, although when properly used, it is a most valuable aid. There are some lessons in which it is not so necessary to aim at an orderly abstract. (In arithmetic or geography, for example, the actual exercises worked, or the map drawn upon the board may be

the best summary.) But, as a rule, the black board at the end of the lesson should show what has been taught, and how the lesson was arranged. Such an abstract is a lesson in itself to the pupils, and it may serve when they are required to write a synopsis of the lesson for their home work.

N.B. *Almost every lesson will require some unexpected modification during its delivery*, in order to adapt it to circumstances that arise. The teacher then has occasion to use his tact. He should know far more about his subject than would appear from his notes, or he will almost certainly fall into difficulty. "You cannot teach all you know." Full knowledge, tact, and a definite aim, are three of the most important desiderata in collective teaching.

Having come to a decision as to the quality and quantity of the matter in the lesson, the teacher has next to consider *how* he can best teach it.*

The **Method**, like the matter, will be influenced by the character of the subject, and the capabilities of the class.

The teacher has to decide whether with the particular class and with the given subject, it will be well for him to employ the "inductive" method or no. If he determine to use it, he must try to arrange the details of his plan accordingly. This is almost always a task requiring much thought.

If he feel that he must give a "Lesson of Instruction," he should remember the conditions on which the success of such a lesson depends. The chief of these are orderly arrangement, apt illustration, the association of new matter with similar stores already existent in the mind, and a certain amount of repetition. His method should provide for these.

It is seldom desirable to keep exclusively to one method throughout a lesson. New facts have to be taught in an "Inductive Lesson," and induction is available at times in a "Lesson of Information." But all the details of the teacher's plan, as far as method is concerned, should be indicated in the "Method" column of the notes.

The writer would advise young teachers, to let this column be ruled as wide as the "matter" column in the notes, and then to see that it is filled quite up. They must then think *how* to teach details.

"*The Introduction.*" If the teacher intend to use any special method in introducing the subject of his lesson, this should appear in his notes. But *mistakes are frequently made on this point.* An "introduction" is out of place unless it serves to awaken interest in the coming lesson. If it be used, it should really introduce the subject in an effective manner, and the

* In practice, matter and method must be thought of together.

shortest introduction, provided it be effective, is the best. A formal introduction is often quite unnecessary.

The teacher ought to have a clear idea of the scope of his lesson before he prepares his "introduction." In fact, this had better be the last part of the preparation, although it appears first in the "Notes."

Some of the Marks of a good Collective Lesson.

It is impossible to specify all the points which go to make up a good lesson. The writer is aware that the following scheme is imperfect, and he is convinced that others would place some matters in a different connection. The young teacher ought to read the chapters on "Discipline," on "Socratic Teaching," and especially the chapter on "Questioning," in connection with the following. He should also study the "Notes of Lessons," and the "Criticism Form," in the Appendix.

I. **The Teacher.** (a) His *language* is well chosen and grammatical, suited to his class and to his subject. It is *free from provincialisms*. His *enunciation* is clear and distinct. He speaks with *due rapidity*, but without hurry. His *tone* is sufficiently loud to be heard by all the members of the class; it is firm and authoritative, yet kind and genial, never querulous or snappish.

(b) His *manner* is calculated to inspire confidence. It is kind, encouraging, magisterial, earnest. Pupils should not be repelled by it, but they should feel that their teacher is not to be played with.

(c) His *eye and ear* are active. He sees and hears everything that he ought to see and hear.

(d) He has good *power of command*. He keeps his class in order without difficulty. He has no occasion to break off his lesson to obtain order. Good order seems to be a matter of course. If he does speak, his wishes are at once complied with.

(e) He *commands the attention* of the class. The attention is universal and sustained. No boys escape his notice. All are made to do their share of the work. He requires and obtains real mental activity from every member of the class, throughout the lesson. He is not deceived by a simulated attention, that quietude of vacant musing which weak teachers are apt to allow in boys who will sit still.

(f) He shows *tact and fertility of resource*. He makes use of unexpected answers, and of difficulties that arise, and of circumstances generally.

(g) He is *thoughtful*, and the children see it. His thoughtfulness is in vigorous exercise whilst he teaches, so that his teaching is a real power.

SCHOOL METHOD.

(h) He is *thoroughly acquainted with his subject*. He has studied it carefully, and has a surplus stock of information on all points, so that he is never posed by an unexpected difficulty.

(k) His *position* is well-chosen, at the proper distance from the class. His *action* is simple and natural, not forced and affected.

(l) Above all, he is in *sympathy with his class*. He appears to understand the children, and they seem to understand him. There is a bond between him and them which renders their work mutually pleasant.

II. **The Lesson Notes** have been carefully prepared. (See pp. 26, to 28.)

III. **The Lesson.** (a) Is suited to the class, not unduly simple nor too difficult. It furnishes an intellectual exercise for the pupils. The lesson should never be looked on as puerile by any of the boys, and yet the teacher ought not to have prepared it on the assumption that the pupils know more than they do.

(b) Is well arranged in simple logical order.

(c) Awakens interest and sustains it. Observation and reasoning are encouraged, thoughtfulness developed, and general intellectual activity secured.

(d) Proceeds from step to step. One part seems to follow naturally from its predecessor. Continual thought and attention are required; the pupils are made to think with their teacher. When a result is obtained, the whole process of arriving at it is grasped by the class.

(e) The parts are taught serially and with thoughtfulness. No part is left until it is understood.

(f) Each part is recapitulated; any incompleteness in the instruction is thus detected and remedied; the needful extra information is either supplied directly by the teacher, or elicited from the pupils by a series of skilfully contrived questions.

(g) Explanations are simple and pointed. Words are explained as occasion arises. Where the ability of the class, and the appropriateness of the explanation render it desirable, words are explained etymologically.

Let the young teacher be sure that the meaning of the word is really rendered clearer by its etymology, before he attempts to explain it in this way. Some words have wandered in meaning so far from their original signification, that it is difficult to see the connection at all.

(h) There is a proper amount of spelling. Here again, the young teacher must be reminded that it is not the purpose of the collective lesson to teach spelling. Words are to be spelled in the Gallery Lesson, only as an aid to remembering them, and as an additional link in associating them with their use.

(k) The lesson is completed in the allotted time. A great advantage of

the practice of recapitulating the parts of a lesson is, that it secures completeness as far as the lesson goes, even if there be not time to deliver the whole.

(l) *The questions* are simple, well-formed, definite, well-distributed, following in proper sequence, and with due rapidity, directed most frequently to the careless pupils. [See chapter on questioning.]

Some teachers make free use of "ellipsis," especially in recapitulation. This form of questioning should, in the writer's opinion, be seldom resorted to. Students are advised to employ it but rarely, and to limit its use to recapitulatory questioning in the lower classes.

(m) *Pauses* are of sufficient length to allow proper comprehension of the questions or of the facts which are taught, but are not of undue length, so as to cause waste of time.

(n) The general plan of the lesson is adhered to, and discursiveness is restrained. But it is reasonably modified according to the circumstances which arise.

IV. The Black Board and Illustrations. (a) These are prepared beforehand, and are in readiness when the lesson begins.

(b) The black board is placed properly, so that all the class may easily see it.

(c) The black board is freely used. The writing upon it is good and neat. A complete scheme of the lesson appears upon the board when the lesson is finished.

(a) *The illustrations are suitable.* They really illustrate the lesson. The illustrations prepared by the teacher himself are commonly the most effective. He must bear in mind that the illustrative drawings and maps which he prepares are to be viewed from a distance. The outlines must therefore be bold, and light and shade must be very strongly marked. Handsome sheets of illustrations on various subjects are now published. If these have a place on the walls of the school, a good deal of information is picked up informally by observant children.

V. The Class. The effect of a good Collective Lesson on the class has been expressed or implied in much that has gone before. The pupils will be orderly, attentive, interested, thoughtful, in sympathy with the teacher whilst the lesson is being delivered, and when it is finished, there will be a subdued pleasure, mingled with a regret that the lesson is over.

And generally, no Collective Lesson can be looked on as successful unless a satisfactory answer can be given to such questions as these :—

What substantial additions have been made to the mental store by it?

To what extent have the reasoning powers been exercised, developed, and strengthened?

Can we reasonably hope that an improved moral tone will be produced by the lesson?

Is its effect likely to be permanent or transient?

QUESTIONING.

Value of Interrogation. Questioning has a twofold use in school work; 1st. It is the chief means of "education;" 2nd. It is the teacher's instrument for testing the fulness and accuracy of the pupil's knowledge.

No one can become a good elementary teacher until he has acquired the art of questioning with readiness and effect.

Questioning is an Art, and facility in this art, as in all others, comes only after painstaking practice.

"We can only become good questioners after much patient practice, and as is the case with every art, proficiency can only be attained by working at it, and education in it only by the teaching of experience."

—*Mr. Fitch.*

Special kinds of Questioning, their use. Good oral teaching is a compound of direct address and interrogation; the one supplies the information, the other enables the teacher to discover whether it has been assimilated or no.

In giving a lesson, the teacher's questions serve different purposes at different periods.

At first he has to discover the amount of knowledge that the pupils already possess on the subject. Such questioning is known as *preliminary or experimental questioning*. It should be animated, searching, and brief. If successful, it will lead the pupil to see his own deficiency, and will create in him the desire for further information. Thus his interest in the coming lesson is awakened.

Next comes the *educational questioning*. This is the most difficult and important of all. If it be managed rightly, the teacher will succeed in leading the thoughts of the boys to a conclusion which he has pre-determined. It demands concentrated thought from him and his pupils. "By it the boys become sharers in giving the lessons."—If it be properly used, the pupils become "skilful finders rather than passive

recipients of truth." (*See Inductive Teaching, p. 20, and Socratic Teaching, p. 22.*)

Lastly, we have *recapitulatory questioning*, or the *questioning of examination*. This is one of the teacher's tests of the success of his lesson.

In a former paragraph (*see p. 27*) we have recommended the practice of *recapitulating the parts* of a lesson. This will be done best by questions rapidly put and distributed over the class.

At the end of the lesson, a similar process ought to be applied to the whole.

Questioning is almost always the best form of recapitulation, whether the lesson has been inductive or no.

Whenever new facts or new truths have been taught, try to drive them home by questioning upon them. But do not allow the question to follow immediately upon the information, or at all events, do not let the *final* question on any new teaching follow directly upon it; or a parrot-like kind of answering will result. No question should be put which does not demand thought before it can be answered.

Some marks of good Questions and good Questioning.

1. They are *simple* and short, the words are well chosen and grammatically arranged.
2. They are in *the teacher's own* words, and not in the words of a text-book.
3. They are *varied in form*. (Some teachers appear almost unable to put questions, except upon a set pattern. This is a weakness which they ought to remedy by thoughtful practice.)
4. They *preserve the interrogative form* throughout. Avoid such forms as these:—"The Indus is a river—of what country?" or, "The battle of Brunanberg was fought—in what year?" Say rather, "Name the country which contains the river Indus." "In what year was the battle of Brunanberg fought?" (This fault, which some would esteem trifling, is so common among students, that the writer feels it his duty to call particular attention to it.)
5. They do not tell much, they do not suggest the answer from their mere form.
6. They *do not admit of being answered by guess*. If questions which are faulty in this particular are frequent, the discipline of the class must suffer. Guessing should never be allowed, and the teacher ought to be on his guard against fostering this bad habit by his style of questioning.
7. They *seldom admit of being answered by "Yes," or "No."* If such questions are given, the answer should be plain and easy, or the question will admit of guessing.

SCHOOL METHOD

8. They are *definite*, admitting properly but of *one answer*, and that the answer which the teacher desires to obtain. Indefiniteness is one of the commonest and most serious faults in questioning. Vague and indefinite questions bewilder a thoughtful boy, and do more to promote the mischievous habit of guessing than anything else, except allowing it to go on unchecked. It is not always easy to frame questions which shall be free from this objection, although few but the practised questioner would appreciate the difficulty. But indefinite questions are so serious an evil, that it behoves teachers to use all diligence and watchfulness to prevent themselves from lapsing into them. Such questions as the following are types of the worst form of indefiniteness,—“*What is there in the north of Africa?*” (answer expected, “The Sahara Desert”); or, “*What took place before the battle of Hastings?*” (answer expected, “Harold’s brother invaded England”). Either of these questions admits of an unlimited number of answers, many of which would be quite as appropriate as the answers which were anticipated.

9. They are *adapted to the capacity of the pupils*. They are such as the pupils may be reasonably expected to answer.

10. They *follow in due sequence*. The answer to one question should usually suggest the next question, and the whole series of questions and answers should be such as the teacher expected and laid his plans to obtain.

11. They follow with *proper rapidity*. The pauses should be long enough to allow the pupils to comprehend both question and answer, but no time should be wasted. The teacher should be *brisk*, but he should *never be in a hurry*.

12. They require a distinct intellectual effort before they can be properly answered.

13. They are *well distributed*. The teacher ought to encourage a habit of answering throughout the class. All the boys should feel that they must try to answer. To obtain this result, the teacher must not attend too exclusively to volunteers, though they ought to get their share of the work. But he must look sharply after those who are disinclined to work of their own accord, and must use the needful pressure.*

* There is no doubt that the chief attention of the teacher, as well as the greatest part of his time and painstaking, ought to be given to the duller scholars, in order to raise them to a fair standard. *There may, however, be a danger of going too far in this direction, and the writer would put in a plea for the bright lads also.* They too, should get their share of attention. But as far as the teacher’s power is concerned, the writer in the *Quarterly Review* is right when he remarks, “The test of a good schoolmaster is his power of improving the average boys, the test of an excellent one is his power of raising those who are below the average.”

Answers. Good questioning will produce good answers. The special characteristic of a good answer is that it is the *thoughtful* result of the pupil's own work.

Skill in receiving and in disposing of answers is an important part of good class-questioning.

If there be *no answer*, the teacher is usually to blame. He has miscalculated the power of the class. But cases may occur, in which the teacher for the legitimate purpose of arousing interest, intentionally proposes a question to which he cannot reasonably expect an answer.

If the answer be a random *guess*, or be *wilfully wrong*, the teacher is certainly to blame,—the discipline of his class is bad.

If the answer be *partly right and partly wrong*, the teacher should endeavour patiently to unravel the difficulty by proposing other questions to simplify the matter, and then in due course returning to the original question, so as to obtain the correct answer. A weak teacher often passes over such answers, or acknowledges them with a helpless “Yes” or “No.”

Always give a pupil credit for any element of correctness, which the answer may contain. Incorrect answers arising from ignorance, should be received with kindness. If possible, lead the pupil to see why he is wrong. Ignorance, if not culpable, ought not to be treated as a crime. Do not resort to ridicule when an answer of this kind is given. We cannot expect a child to strive to answer, if he feels that he may be laughed at for his pains.

Children should be encouraged to ask for the solution of any difficulty that may arise in their minds during the lesson. Such questions are an evidence of thoughtfulness on their part.

Simultaneous Answering is generally misleading, unless the answer to the question be very evident. This mode should seldom be resorted to except as a means of re-awakening flagging attention.

If the teacher employ it extensively, it will do harm. It is astonishing with what readiness boys can take their cue from one another, so as to produce the appearance of unanimity and of a common knowledge. The wise teacher, however, knows that such apparent wide-spread skill is fallacious, and he will rarely employ a method in his teaching which admits of such mis-interpretation.

“The whole sum of what may be said about questioning is comprised in this It ought to set the learners thinking, to

promote activity and energy on their parts, to arouse the whole mental faculty into action, instead of blindly cultivating the memory at the expense of the higher intellectual powers. That is the best questioning which best stimulates action on the part of the learner, which gives him a habit of thinking and enquiring for himself, which tends in a great measure to render him independent of his teacher. All our questioning should aim at this, and the success of our teaching must be measured not only by the amount of information we have imparted, but by the degree in which we have strengthened the judgment and enlarged the capacity of our pupils, and imparted to them that searching and enquiring spirit, which is a far surer basis for all future acquisition than any amount of mere information whatever."—*Mr. Fitch.*

READING

Importance of the subject.—Reading is commonly allowed to be the most important of the “three R’s.” It is the great means by which we obtain an acquaintance with matters that lie out of the sphere of our own direct observation.

The man who cannot read, has his ideas limited of necessity to what he can obtain from oral instruction, and personal experience and observation. He who can read, has all literature open to him. He can make himself acquainted with the best thoughts of the best and wisest men. He has the key of all human knowledge in his possession.

Its difficulty. Reading is a difficult subject to teach, and that for two chief reasons, the one in the nature of the subject, the other in the nature of the learners.

1. Arbitrary characters, singly or in combination, are taken to represent articulate sounds. The characters do not by their *form* suggest the idea which is suggested by their *sound*, until the learner has made very considerable progress. Learning to read consists in learning to *recognize the characters* (i.e. printed words and their elements), which stand for *sounds*, and in associating the idea suggested by the sound of a word when spoken, with the appearance of the corresponding printed characters as seen in a book. This is not easy, and there must be much practice before the association can be perfect.

2. The intellectual power of children who are learning to read is but small, so that the inherent difficulty of the subject becomes more formidable in their case.

The objects to be aimed at by the teacher in this subject are twofold:—1st. *Overcoming the mechanical difficulty* of the subject, and enabling pupils to read and understand for themselves. 2nd. *Giving the ability to read aloud* in an intelligent and intelligible manner.

1. In the first case, the teacher must try to give his pupils the power of comprehending the ideas which are meant to be conveyed by the printed characters in a book. In the end, they should do this so readily

and easily, as not to be under the necessity of consciously thinking about the forms or sounds of the words employed.

2. The second supplies the test we apply in measuring the amount of our success in the first. A pupil can hardly read intelligently unless he has an intelligent comprehension of what he is reading. We therefore use reading aloud as a means of imparting power to the pupil, and as a means of testing the power he has acquired.

The chief marks of good Reading are—

1. *Accuracy of Pronunciation*, depending on command of the vocal organs, a cultivated ear, and distinct and forcible enunciation.

2. *Ease*, depending upon familiarity with words, and practice in reading aloud.

3. *Fluency*, a combination of accuracy and ease.

4. *Intelligence*, depending on clear insight into the matter read.

5. *Expressiveness*, depending upon all the foregoing, as well as upon physical ability, intellectual refinement, and sympathy with the author.

In endeavouring to secure these, the following matters must be noticed :

Articulation and Enunciation. Young children cannot speak plainly because they have not yet acquired complete command over the vocal organs. The teacher should aid them by calling their attention to the position which is assumed by the various organs in sounding different letters and words, and causing them to imitate him. Older children often fail to speak distinctly because of the slovenly use they make of the organs of speech. In this case it is the teacher's duty to insist upon careful imitation of the pattern which he gives, and he should carefully show how the lips, tongue, and teeth are to be used. Among the commonest instances of slovenly pronunciation we may notice :—

Aspirate omitted or misplaced. This is the "most widely diffused fault of English pronunciation." Frequent practice, and the occasional employment of selected sentences, with constant careful attention, are the best means at the teacher's disposal in this matter. As much attention must be paid to misplacing the aspirate as to omitting it. There is a stage in the reader's progress, when he is very liable to fall into this fault, especially when he wishes to emphasize carefully a word beginning with a vowel.

Final g omitted, (e.g. "singin,'" for "singing.") Do not, however,

fall into the opposite error, and pronounce the word as though it were "sing-ging.")

Omission or slurring of allied sounds, when they come together, (e.g. "this shrub," pronounced as "thishrub," "cast stones," as though it were "castones," and "fixed star," as though it were "fixtar.")

Omitting syllables in long words (e.g. "u" in "particularly.")

Introducing letters or syllables wrongly. The letter "r" is often thus introduced as a final (e.g. "sawr," for "saw".) Entire syllables are sometimes imported into words, (e.g. "tremendous" becomes "tremendious," and "umbrella" becomes "umberella," or even "umberellar.")

Various provincialisms. The teacher should furnish a model of standard pronunciation in his own speech. Where local habit misplaces *w* and *v*, or where other vulgar errors obtain, the teacher must combat them resolutely. But unless the provincialisms degenerate into vulgarisms, it is a mistake to spend the time over them which may be more usefully employed in other ways.

Tone and Manner should be unaffected and natural. It is common enough to find children falling into a monotonous and laboured style. The best remedy is "*pattern reading*" by the teacher. Afterwards call on the child to read the same sentence, and to imitate you as nearly as he can in reading it. Something may also be done, by occasionally allowing the children to read interesting lessons with which they are already acquainted. Grapple vigorously with this fault, for if neglected, it will spoil the reading of the school.

Emphasis is the prominence given to certain words or parts of a sentence, which tends to make the meaning clear. The sense of a sentence may be entirely altered by altering the emphasis; (e.g., the question, "*Do you walk to London to-day?*" may have five different meanings according to the word which is made emphatic.) The reader must grasp the meaning of his author before he can distribute the emphasis justly. Too many words must not be made emphatic, or the fundamental condition on which emphasis depends is violated, and the reading will be stilted and pompous. Let the teacher *show his boys how* to place the emphasis, and then *see that they carry out his directions*.

Rate. When children can read fluently, they are always tempted to read rapidly. Insist on due deliberation. There is truth in the odd couplet:—

"Learn to read slow, all other graces
Will duly follow in their proper places."

Pause. This is a chief aid to expression. In the early stages, children

SCHOOL METHOD.

should be required to "mind their stops." Advanced pupils should be taught to regard the *sense* of what they are reading, and to pause accordingly. Notice that we *may* pause between each limb of a sentence. By pausing judiciously, the reader husbands his stores of breath, and is able to read for a longer time without fatigue, and to spare the breath that is wanted for the aspirates when they occur. He is able also to let his eye be in advance of his voice, and thus he can better comprehend the meaning of what he is reading.

Inflection and Modulation. If children could "read as they talk," they would employ such modulations and inflections as would express their meaning most naturally. We frequently hear a notorious "hesitating" character preserved throughout an entire sentence. To correct this, show the children what the sense of the passage is, and require them to "tell" you. The difference between their styles of reading and speaking will thus be made apparent to them. Then show them *how* to read the sentence, and *in*.

The chief recognised methods of teaching reading are three in number, and are known as, I. The *Alphabetic Method*; II. The *Phonic Method*; III. The *Look and Say Method*.

I. The Alphabetic Method. This is the method which, until recently, has been universally adopted. It is a method of synthesis, commencing with the simple elements, (letters), and proceeding to combine them according to the different degrees of complexity in the compounds, (syllables and words).

Description. The pupils first learn the letters of the alphabet.

When these are thoroughly known, so that the pupil can at once pronounce the conventional name of a letter as soon as it is pointed out to him, two letters are combined into a syllable or word. (*e.g.*, ab, eh, ib, ob, ub;—an, in, on.—See Mavor's or any other old Spelling Book.) The pupil is required to "spell" and "pronounce" each syllable.

Syllables and words of three letters are next introduced, and are treated in the same way.

As the power of the pupil increases, combinations of greater difficulty are gradually brought under his notice, and the process is continued, until he is able to read and spell readily.

The special feature of the method is the prominence which it gives to spelling in teaching reading.

Remarks on the Method. 1. It appears to be the natural order, to commence with the elements and proceed to combinations.

2. The method has the sanction of long usage.

3. Objection is sometimes made to the method, inasmuch as the names of letters furnish little or no help in determining the sounds of words; (e.g. "bee"-“oh”-“w(ā)y,” does not give any clue to the pronunciation of the word “boy”). The answer to the objection is, that the method “does not pretend to be phonic. When it takes the spelling of words along with their sounds, its object is simply that the spelling may be learned with the reading.”—*Currie*.

4. This attempt to teach reading as a result of spelling “inverts the natural order.” We spell well because we can read well. Reading comes first, then spelling. Both depend almost entirely on the visual memory. In order that the impression on the memory may be decided, there must be a certain amount of repetition of the impress. This repetition is best secured by frequent reading.

5. Supporters of the “Look-and-Say” method object to the “Alphabetic” method, because in the latter there is a contrariety to the actual method of acquiring spoken language. As children when they are taught to talk, learn words first, it is held to be more in accordance with the natural order to begin with words in learning to read. The elements (i.e. letters) are meaningless to children.

6. Experience has shown that, with teachers of ordinary calibre, the method is extremely tedious. So great is the tedium, that children frequently acquire a dislike to the whole subject.

II. The Phonic Method is also synthetic. It begins with the elements, and afterwards combines them. But the elements in this case are the *sounds* or *powers* of the letters in a word, and not their conventional names. It is an attempt to enable the pupil to pronounce the whole of a word by the separate pronunciation of its parts.

If we take the complete knowledge of the alphabet to include a knowledge of the *form*, *name*, and *powers* of the letters, we may mark the difference between this method and that just noticed thus:—In the alphabetic method the *name* is taught with the *form*; in the phonic method the *powers* of the letter are sought to be primarily associated with the *form*.

Description. In practice the method would have three stages—(1) Analysis of the sound of a word into its component sounds; (2) Giving power to recognise the picture of the sound, i.e., the letter which represents it, and to articulate it; (3) Application to new cases.

The teacher might proceed as follows:—He would choose a word such as “mat,” and would endeavour to isolate the sound of each letter in it, “m—āt,” in order that he may show the power which each has.

SCHOOL METHOD.

A common device for calling the attention of children to the sound required, is to introduce the picture of some common animal whose name contains the sound.

He would pronounce the word "*mat*," and would cause the pupils to notice the position of the vocal organs (the lips in this case), as he sounds the first letter, "*m*." He would also give the sound "*ilm*" of the letter by itself, and would require the children to imitate him in articulating it.

Then he would show the picture of the sound, i.e., the letter "*m*." To impress both sound and form on the minds of the children, he would require them to pronounce or articulate it frequently, to find the character in other places on the lesson sheet, to draw it on their slates, and to form it with pieces of wood supplied for the purpose.

He would select other words in which the same sound occurred, and would require the children to pronounce them after him, in order to enlarge their acquaintance with the sound and the appearance of the letter.

The powers of the other letters in the word might be taught in the same way.

At a later stage, after a fair acquaintance with the powers of the letters has been gained, the sound of two or more letters in combination may be taught, e.g., "*at*." (*Some teachers begin here.*)

By prefixing sounds with which children are supposed to be already familiar, the sounds of such words as "*bat*," "*cat*," "*fat*," "*pat*," "*rat*," "*sat*," "*vat*," might be constructed.

Reading lessons have been prepared for the method, and are used in the next and higher stages, until the pupil has acquired the power of reading well.

Remarks on the Method :—

1. It is likely to secure accurate and careful enunciation.
2. Theoretically the Method is sound, inasmuch as the pupils are taught to pronounce a whole, by the separate pronunciation of its parts.
3. Like the Alphabetic Method, it teaches reading and spelling together.
4. Perhaps it is more likely to evoke the interest of pupils than the Alphabetic Method.
5. "Such a method is nothing but a variety of the Alphabetic Method with other names to the letters."—*Cill.*
6. It is open to the objection, that it is frequently found to be impossible in practice, to isolate the constituent sounds which make up the sound of a word. It then becomes impossible to construct the entire sound from its elements. If every letter always had an invariable sound, and it were possible to isolate its sound, the Phonic Method would be practically as well as theoretically effective.

But consonants cannot really be sounded alone; the same character may

have various sounds (*e.g.*, *a* in "many," "sat," "fate," "father," "fall." Some letters are not sounded at all (*e.g.* "s(*c*)ienc(*e*)," "(*p*)sa(*l*)m, &c.); and the same sound is indicated in various ways (*e.g.*, "fed," "jeopardy," "any," "bury," "bread," "friend," "heifer," "said," "says").

It is allowed that the sounds or articulations of the letters on the Phonic Method, furnish a nearer approximation to their true sounds than on the Alphabetic Method. Therefore they do furnish a greater aid in pronunciation. But inasmuch as the sounds of the same character are variable, the pupil cannot with certainty construct the sound of a new word.

7. Many of the commonest words in the language could not be taught phonically so early as their importance warrants, because of their anomalous pronunciation, *e.g.*, "is," "to," "one," &c.; all such words are practically learned on the "*Look-and-Say*" system, whatever method of teaching has been adopted.

8. The system appears to be too elaborate and complex for rough usage.

9. In the hands of some teachers the method has nevertheless proved very effective.

III. The Look-and-Say Method, or Method of Reading without Spelling. This method deals primarily with words as a whole, and afterwards proceeds to analysis. It thus differs fundamentally from the synthetic methods before noticed. It endeavours to teach reading by calling attention to the general appearance of words. The sounds of words as a whole are associated with their forms as a whole.

The *Alphabet* should be learned, before pupils begin to read. The knowledge so acquired is a valuable aid to further progress, especially in the analysis of words. But it is to be noted that this exercise forms, in strictness, no essential part of the "*Look-and-Say*" method of learning to read. *Spelling* also is not relied on in teaching reading by this method.

Description. The Teacher having a lesson sheet of short sentences made up of selected words, reads a sentence slowly, and points to each word as he pronounces it. ("*Look-and-Say*.)

He requires the class to read the same sentence simultaneously as he points to the words. He then calls on one or more individuals to read the same sentence in the same way ("*Look-and-Say*"). He tries to secure careful *attention*, and to impress what is taught by frequent *repetition*.

He may test the success of his teaching so far, by asking the pupils to pronounce the same words as he points to them in other parts of the sheet.

This process is continued until the pupils acquire fair power in pronouncing words at sight.

As the children become familiar with words, *they notice differences between dissimilar words, which yet have a general resemblance to one another. (e.g., "board" and "broad," "though," "thought," "through," "thorough.")* Analysis begins here, and the teacher may use their knowledge of the alphabet, which we have pre-supposed, in pointing out these differences.

In the early stages, the teacher will use lesson sheets. When the children begin to read from books, they should be required to *point to each word as they pronounce it*, with a view to greater concentration of attention upon it.

Practice gives the pupils experience of the powers of letters in combination. They apply the power thus gained to new cases, and in time are brought to read well.

Remarks on the Method.—(1) It is natural, inasmuch as it is analogous to the process by which the child becomes acquainted with spoken language. In learning to speak, we use words as a whole; in learning to read on this method, we use materials (words as a whole) with which the child is already familiar in one aspect. “In acquiring speech the ear catches the sounds of words as wholes, and associates the sense with them without any analysis: so in reading should the sound and sense of words be associated with their forms as wholes, without any analysis for that purpose. The eye does in the latter with the forms, what the ear does in the former with the sounds.”—*Currie*. In fact, reading is essentially a matter for the *eye*.

(2) It has been a matter of dispute whether children acquire the power of pronouncing new and unfamiliar words more readily by this or by the synthetic methods. There is little doubt that the pupils form ideas as to the powers of letters in combination as they learn to read, and they apply their acquired ideas in new cases as surely, whether they have been taught on one method or on another. But inasmuch as more practice is given from the first in sounding letters in combination by the “Look-and-Say” method, it is reasonable to conclude that correct mental generalisations are arrived at sooner when this method is employed, than in other cases.

(3) It is certain that we cannot read, until we at once associate the appearance and the sounds of words as a whole. Many very common words are really learned as wholes, whether we profess to teach on the “Look-and-Say,” or any other method.

(4) The method is rapidly growing in favour with teachers.

(5) Unless the teacher be careful, *a habit of guessing is likely to arise in the earlier stages.* In addition to the needful determination on his part, he must cultivate careful observation of the forms of words, to

correct this tendency. Oral spelling and transcription will help him here. The writer's opinion on the whole question is, that reading may be best taught by adopting the "Look-and-Say" method as a basis. But he would incorporate certain features from the other methods in his teaching. For example, he would *call on boys to spell words frequently after they had read them*, with a view to calling their attention to details. The careful attention to distinct articulation and enunciation, which is fostered by the phonic method, ought to find a place in every system of teaching reading. In fact, the teacher must make a method of his own, which shall embody the excellencies and exclude the defects of all the methods which have been mentioned.*

Method of Teaching the Alphabet. The teacher must endeavour to make this first stage as interesting as he can. His object will be to complete the association of form and name of each letter (or its *sound* if the Phonic Method be adopted), as soon and in as pleasant a manner as possible. He must take into account the tender age of his pupils, and the mental and physical peculiarities inseparable from it; such as their love of novelty, and their inability to bear long-continued and exacting mental strain. Bearing these considerations in mind, he might proceed thus:—

Teacher prepares a sheet of printed letters. He also has the separate letters printed on cardboard, and obtains a box of small thin sticks with which he may build up the letters. He provides himself with black board and chalk, and sees that each of the children has his slate and pencil.

(1) He arranges the letters according to their *forms*, I, H, T; F, E, L; p, q, b, d, &c.

(2) He takes one group and introduces its simplest letter. The pupils are told the *name* (or sound) of the letter, and are required to *pronounce* it simultaneously and individually, to *point it out* on the sheet, and to *find it* among the loose cardboard letters.

(3) He *draws* it on black board, asking its name (or sound) again as he does so, and requires children to attempt to draw it on their slates, or tells them to make it with short pieces of stick provided for the purpose.

* Other systems of teaching reading, chiefly based on the alteration of our present alphabet so as to avoid its anomalies, have been proposed. But these schemes have not yet grown to such importance as to require discussion in a practical elementary work.

SCHOOL METHOD.

Note that constant *repetition* of form and name in connexion tends to implant both in the same connexion on the memory. Also note that eye, ear, voice, and hand, may be made to aid one another in acquirement. As a further aid in the association, it is well also to have a sheet alphabet, in which pictures of common objects are placed close to the corresponding letters. A child will learn his letters more quickly and pleasantly, if he speaks of “‘A,’ for Apple;” “‘M,’ for Mother;” “Round ‘O,’ for Orange,” than if he has nothing but the name and the form to associate, both of which are unfamiliar to him.

(4) When one letter has been thus thoroughly taught, he proceeds to another in the same group, showing the *difference* between it and its predecessor.

(5) In this way, the writer has found it possible to teach the alphabet quickly and thoroughly.

Instructions for a Pupil-Teacher who is about to give a Reading Lesson to a Junior Class.—(1st Standard.)

(1) Make yourself acquainted with the lesson beforehand, so that you may be able to give undivided attention to the children as they read. Stand in such a position as will allow you to see every member of the class easily, and place them so that they may easily see you.

(2) Have the page found, and the books shown to see that all are ready.

(3) Endeavour to arouse the interest of the class in the coming lesson by a word or two of introduction. *See (1) above.*

(4) Pronounce the first word distinctly, but not too loudly, and cause the boys to imitate you, either simultaneously or individually, according to your discretion. Proceed thus with the other words in the sentence.

Note carefully. Every child should *point* with his finger to the word he pronounces, for reasons given before. (*See p. 44.*) This pointing ought to be discontinued after the child becomes familiar with words.

(5) Read the sentence (which should be short) slowly. Let the children imitate you. You should meantime, stand in such a position as to be able to see that *all* point to the words as they repeat them. (One of your difficulties will consist in *securing the attention of every child*, whether he is reading aloud or no.)

(6) Correct any errors that are made, and *see that they are rectified* by the pupils. If a mistake be allowed to pass, the trouble in correcting it is postponed and augmented.

(7) Require individual scholars to read the same sentence. Allow mutual correction under your supervision. Listen carefully for errors of pronunciation and for faults in articulation, and see that they are corrected.

(8) Go through the whole lesson in this way. You may vary your plans slightly by any device that you think likely to awaken flagging

interest. For example, you may call on a good reader to read a sentence *first*, instead of reading it yourself, letting him and his classmates feel that this is a species of reward.

(9) There may be a little oral spelling after the lesson is finished, all the boys except the pupil who is challenged, being allowed to look at their books as the word is spelled.

(10) Endeavour to *make the children understand what they are reading*, and to read as though they understood it. To this end, you should give questions and explanations. But you must remember that *the object in a reading lesson is to teach reading*. This is best done by practice. You will therefore have to use your judgment as to the amount of time which ought to be devoted to spelling and to questioning and explanation. Give as much time as possible to actual practice in reading.

Reading in a higher Class. (Standards IV., V., VI.)

(1) Allow the boys to look over the lesson for five or ten minutes before the reading begins, so that they may form some idea of its character, and may master the difficult words. This must be done under supervision, and it is advisable to allow the pupils to write out the words which they think to be difficult.

(2) The teacher should go through the lesson with the whole class, correcting errors, furnishing the needful explanations and illustrations, and showing how the various sentences ought to be rendered. He will use mutual correction, and have the most difficult word in each sentence spelt orally.

(3) The children ought now to know how the lesson should be read. To give the practice which is desirable, it is well to break up the section into small groups, placing one of the best readers to be monitor in each group; arrange the groups close around you, and pass continually from one to the other.

The writer is aware that it is difficult to carry out this arrangement except in a class-room; but he has found it to work so well, that he ventures to recommend its adoption wherever it would be practicable.

(4) The Dictation Lesson should follow this exercise, and should consist of a number of the most difficult words in the lesson, and a short paragraph from it.

Simultaneous Reading.

Method. (1) The teacher should read a sentence himself, to shew how it is to be read.

(2) The class may next read the same sentence with the teacher.

(3) Part, or the whole of the class, should be required to do the same simultaneously.

(4) Individuals should be called on to read.

(5) Supplement the lesson on Simultaneous Reading by breaking up the class into groups, and proceeding as directed in the "Reading in a higher Class."

Do not allow this lesson to become tedious. You may introduce variety by calling on different parts of the class to read, by reading a sentence alternately with the class, or even by reading alternately from stop to stop. This last plan is of service where boys are inclined to be careless about the punctuation marks. Other devices will occur to the practical and earnest teacher.

Advantages of simultaneous reading. (1) It tends to encourage deliberate, distinct, and careful articulation (provided of course, that the teacher does his duty).

(2) It secures uniformity in tone, inflection, rate, &c., and these ought to be those given by the teacher.

(3) It "aids those who are weak, and gives confidence to the hesitating."

(4) The pupils get more practice by this method than by any other.

(5) It is a means of correcting faults which are common to the whole class (provided again, that the teacher be well up to his work). Perhaps it is more effective as a corrective instrument, than as a means of imparting excellencies.

Defects of this Method. (1) It is extremely difficult, and frequently impossible, for the teacher to distinguish individual faults.

(2) The individual taste is not cultivated so directly as by individual practice.

(3) Any fault, common to the class, which is allowed to pass uncorrected, becomes intensified by the general repetition. *Tone, inflection, emphasis, &c., must be very carefully attended to* in the Simultaneous Reading lesson. The teacher must be shrewd, and must have all his wits about him in this exercise, as it offers unusual facilities for individual carelessness. It is dangerous to leave Simultaneous work in the hands of a weak teacher.

N.B. Whatever increases the child's familiarity with words, aids him in reading. Learning by heart, collective lessons, grammar, and especially logical analysis of sentences are valuable for this purpose.

Young teachers are advised to teach this subject with painstaking and care. It is too common to find teachers who "hear" the reading without really attempting to teach it. Frequent "pattern reading" on your part will generally be the most effective means of teaching that you can adopt.

Some of the students who enter training colleges, after having passed the Queen's Scholarship examination, have a difficulty in reading more

than a few lines at a time. They can generally read a sentence or two fairly, but if they are required to read a whole page, they fail to maintain a good style throughout. Something may be done towards remedying this defect, and towards improving the character of the reading in your school, if you accustom yourself to read aloud to your class from some interesting book. The writer has found this to be a good plan for securing regular attendance on Friday afternoon.

S P E L L I N G

Importance of the subject. Society demands correct spelling from an educated man. Teachers ought therefore, to devote careful attention to this subject, and the Education Department is justified in regarding it as an essential part of the "Standard" examination.

Whilst the ability to spell correctly is scarcely considered to be a merit, inability is deemed a disgrace. There is little disposition to make allowance for failures in spelling. It is assumed that bad spelling is the mark of an inferior education.

The habit of paying so much attention to spelling "is artificial and partly new." It is not uncommon to find the same word spelled in half-a-dozen different ways by the same old author.

"Systematic uniformity in spelling is hardly older than the time of Johnson's dictionary. He speaks of orthography as having been to that time 'unsettled and fortuitous.' In confirmation of this statement it may be noted that Tyndal (1447—1536) spells so common a word as 'it' in eight different ways—*it, iit, yt, ytt, hit, hitt, hyt, hytt*."—(Dr. Angus.)

Its difficulty. English orthography is peculiarly difficult.

(1) *The same symbol represents more than one sound.* The character "a" stands for five distinct sounds in the words "many," "fat," fame," "father," "fall." In the same way "e" stands for two sounds, as in "mete" and "met;" whilst "o" stands for three sounds, "not," "note," "nor;" and "u" represents three sounds, "tab," "bul," and "rule." The letter "i" stands for two sounds, one simple as in "sit," the other really diphthongal, as in "fine." Nor is the sound of the consonants invariable; for example, the symbol "s" represents four distinct sounds in the words "sum," "sure," "eggs," "pleasure."

(2) *The same sound is represented in several ways.* The sounds represented by the italicized letters in the following words are identical; "busily," "women," "marriage," "guilty," "cribbage," "surfeit," "sieve," "breeches," "pretty," "money," "yellow." We have here instances of thirteen different modes of expressing the same sound in printed characters, and three of these methods occur in one word, "busily."

Other illustrations of the same principle, but in which consonants are involved, are offered in “*Pict*” and “*picked*,” “*race*” and “*base*,” “*philosophy*” and “*forfeit*,” “*adds*” and “*adze*” and in many other instances.

Adams summarizes thus:—“*Thirteen* vowel sounds are represented by *five* symbols, and the same thirteen sounds are expressed by (at least) *one hundred* expedients in the written language.”

(3) *Letters are sometimes silent*; as “*e*” and “*e*” in “*science*,” and “*p*” and “*l*” in “*psalm*.”

(4) *Simple sounds are represented by complex characters (two letters)*; as in “*suck*,” “*loch*,” “*thin*,” “*thine*.” Most of the so-called diphthongs are of this character, e.g., “*laid*” (*lade*), “*awl*” (*all*), “*guard*” (*gard*), and many others.

(5) *Compound sounds are represented by simple characters (single letters)*; as, “*thine*” (*height*), “*lute*” (*few, suit*).

Reasons for this irregularity. Most of the anomalies in English spelling are traceable to one or more of these causes,—

- (1) Imperfection of our alphabet; (2) Etymology; (3) Altered pronunciation.

(1) *Imperfection of our alphabet.* There are 41 elementary sounds in English, to represent which we have 21 effective letters. (The letters *c*, *g*, *x*, and less evidently, *w* and *y*, are redundant.) Recourse must therefore be made to various orthographical expedients. A perfect orthographical system could only exist with a perfect alphabet, in which each elementary sound is represented by its own peculiar symbol. As examples of the *orthographical expedients* which we employ, we may mention—

(a) *E mute* at the end of a syllable lengthens the preceding vowel sound. “*nōt*,” “*nōte*.”

(b) *A doubled consonant* at the end of a syllable denotes that the preceding vowel sound is short, “*cāre*,” *carry*.”

But even such rules are not inviolable.

(2) *Etymology.* An attempt is generally made, to show the connection between a derivative and its root, in the spelling of the derived word; e.g., “*ci'ty*,” is pronounced “*sity*”; but we retain the “*c*” to show the connection of the word with the Latin word “*civis*.” So also each “*ph*” in “*philosopher*” is pronounced like “*f*;” but we endeavour by our mode of spelling the word, to indicate its origin in the Greek words, *φίλος* (*philos*), and *σοφός* (*sophos*).

Some words are sounded alike, but are different in meaning. Sometimes these words are from the same root; as, “*check*,” “*cheque*”; “*canon*,” “*cannon*;” and sometimes from different roots; as, “*son*,”

"*sun*"; "*hair*"; "*hare*." It is felt to be desirable to indicate this difference in meaning by maintaining the difference in spelling.

Differences in spelling are sometimes traceable to the mode in which words were introduced. Ben Jonson (1573—1637) uses the word "*humorsome*," which he derives at once from the Latin "*humor*." The form "*humoursome*" is derived through the French, and is connected with the French word "*humour*." The forms "*independent*," "*pendant*," are explained on the same grounds.

(3) *Altered pronunciation.* Languages undergo changes in course of time. Words alter in sound and in spelling. But the changes in form do not always harmonize with the alterations in sound, and we have in this circumstance a not infertile source of difficulty in spelling. Such words as "*moved*," "*kneves*," were formerly pronounced in two syllables, the vowel in the termination is now silent. "*Oney*" and "*ta-ta*," "*began*" and "*ocean*," and many other pairs of words, quite as dissimilar in modern pronunciation, appeared formerly as rhymes.

Pronouncing dictionaries do not agree as to the correct pronunciation of certain words, and there is a corresponding difference in the practice of educated men. Such words as "*leisure*," "*knowledge*," "*schedule*," "*neither*," will serve as examples.*

Spelling depends more upon the eye than upon the ear. In this respect it resembles reading, and in fact, good reading and good spelling usually go together. The child who can read well is generally an adept in spelling.

When we are in doubt as to the correct spelling of a word, we frequently *write it down*, and the *eye* determines whether it is correct or no.

When we have made fair progress in *oral spelling*, we really construct a mental picture of the word which we hear, and then analyse it into its letters as we spell it, from the mental picture.

The essential difference between reading and spelling is that the one is a constructive, the other an analytic exercise.

In reading, the parts are combined at a glance into a whole; in spelling, the whole is divided into its parts. But both reading and spelling depend mainly on the visual memory for form.

General principle on which spelling should be taught. If the statements in the preceding paragraphs be correct, it follows, that spelling should be taught by appealing to the eye

* On this subject consult Marsh's Lectures on the English Language, No. xxii. It would be out of place for us to proceed further with it here.

rather than to the ear. More rapid progress will be made by directing the learner's attention to the *form* of the words and by requiring him to reproduce their form, than by causing him to utter in order the conventional names or sounds of the letters which make up the word.

Therefore the black board should be used extensively in teaching spelling, and children should be required to *look* carefully at the words, and to *write* them frequently. Hence also the writer thinks it undesirable to use exercises in which mis-spelled words are given to be corrected. The incorrect form is sure to have some mental persistence, and may be obstructive in the future.

Unless the children's attention be called to the details in the forms of words, and unless they have practice in analysing and in constructing words, they will not become skilful in spelling. We must teach the subject.

It will not be safe to rely upon the reading lesson for affording sufficient instruction in spelling. The cursory glance which is given to words as we read, is seldom enough to fix the details of their form on the mind. We must require our pupils to *look* carefully at the words, to *write* them, and to *spell* them orally to secure the needful attention to details.*

Practical Hints on Teaching Spelling.

I. **The Reading Lesson.** It is advisable to allow advanced scholars to spend four or five minutes in looking over the lesson, before the reading actually begins. They can then notice the difficult words, and they should

* It may be well to remind young teachers that in order to secure rapid progress in any subject, there must be *concentration of mind* or *attention*, and a certain amount of *repetition*. New facts should also be connected with each other and with the previous mental store by as many links of *association* as possible. (The *natural quality of the mind* itself is of fundamental importance in modifying the rate of acquirement, but the processes here indicated are necessary for all minds.) In teaching spelling, we require our pupils to *look* carefully at the words, or to *point* to them in order to secure the mental concentration which is needful. We cause them to do this again and again, in order to deepen the impression on the mind. We call their attention to the *printed* word, we *write* it on the black board, we tell them to *write* it on their slates, and to *spell* it orally, in order that the mental result of each of these processes may be more permanent because it is associated with other impressions.

These principles should regulate the action of the teacher in all the subjects that he teaches.

SCHOOL METHOD.

be allowed to write them down. (Some teachers postpone this exercise until the *end* of the reading lesson.)

If lists of words are given at the head of the lesson, have these words learned; but make such arrangements as will leave due time for the reading.

When no lists are given, five minutes may be well spent in allowing each pupil in turn to spell a word from the lesson. All should have their books open, and the teacher may cultivate sharpness of eye and attention to detail, by requiring each pupil to spell the words of "more than one syllable," or "of more than four (or five) letters," in the order in which they occur in the lesson. This exercise may be made very interesting for a short time.

As soon as a pupil has read a sentence, the teacher may with propriety call on him to spell any word in that sentence, sharply and at once. Boys ought after a little practice, to be able to spell the words which they can read.

Words that are not known may be put upon the *black board*, and be given in the dictation lesson afterwards.

If, during the reading lesson, a pupil fail to spell a word, he should be required to *look* at it. Insist upon all using their eyes well.

II. Formal Lessons on Spelling. These are not often given, although good results are likely to follow from their employment. But there must be a very considerable acquaintance with the structural peculiarities of words on the part of the teacher, and he ought to be provided with a good text-book.

Attention should be paid to the rules which govern the building up of words, such as the omission of final *e*, when a syllable beginning with a vowel is added (*e.g.* "love," "loving,") and many others.

Spelling-books, if well arranged, may be very useful. Several good modern books are available.

If the teacher attempt to give formal lessons on spelling, he ought to *prepare these lessons carefully*.

III. Transcription. We find in practice, that many mistakes are made in short words. In fact, such words are frequently very anomalous in their pronunciation.

Transcription is valuable as a means of fixing the forms of words in the mind, and is especially valuable in the case of short but difficult words.

The pupils should be required to *copy without mistake*, and in their best style, the extract which has been appointed. A mistake ought to be looked on as a serious matter: it must arise from carelessness, for the pupil can read and write before he is set to this exercise.

Transcription is the best introduction to the dictation lesson. It should be used extensively throughout the school.

N.B. Unless the work be carefully examined, the exercise becomes worse than useless. A habit of carelessness is engendered, and this is fatal to good spelling.

IV. Dictation is a testing exercise, and is only an indirect means of teaching spelling. It is a mistaken idea to attempt to teach spelling by dictation alone.

Dictation should never be given unless the pupils can reasonably be expected to spell the words. If children are set to do what they are not sure of, they must *guess* or *copy* :—the one encourages carelessness, the other is a species of cheating.

If a child always makes numerous mistakes in his dictation, he comes to look on this as the recognised condition of things, and to esteem it a trivial matter. *This is exactly the contrary to the feeling which should be cultivated.* The pupil also has actually something to unlearn, after he has written a word incorrectly. The correct principle to act upon is to *give no excuse for making mistakes.* If errors are made after this, they should not be passed over lightly.

The mistakes which are made should be carefully corrected.

It is desirable for the teacher to keep a list of the words in which errors have been made. These serve for lessons in oral spelling and for dictation. Good results will follow from their thoughtful use.

Repeat the Dictation lesson after an interval of a few days. (The writer would recommend the adoption of this device whenever the spelling is bad throughout the class. He has sometimes caused the same extract to be repeated day after day until every boy in the section could write it without mistake, and he is convinced of the wisdom of such a plan, when carelessness prevails extensively. *Boys ought to feel that what you require of them is reasonable and fair.* After previous and recent instruction they ought to be able to show that they have assimilated it.)

Interesting dictation lessons may be made up by the teacher. Choose a number of words bearing on a subject (such as "parts of the body," "the breakfast table," "the garden," and the like.) Teach these in spelling lessons, and recapitulate by dictating sentences so constructed as to contain these words.

V. Original Composition, such as letters, answers to questions for home lessons, reproducing the substance of a narrative that has been read to them, and the like. This also is a testing exercise, and but an indirect means of teaching spelling. But it differs from the dictation lesson. In the composition exercise, the pupils make use of words with which they are acquainted; in dictation they are required to attack words selected by the teacher, partly with a view to increase his pupils' store. Although theoretically our pupils are acquainted with the words they use in their

themes, yet we find in practice that numerous mistakes in spelling are made.

Revise these exercises thoroughly, and have every mistake corrected by the defaulting pupils.

Directions for a Pupil Teacher who is about to give a Dictation Lesson.

1. Give the children an opportunity of learning the words that are about to be dictated. Let them have their reading books for five or ten minutes before (or after) their reading lesson, and study the words on part of a page, or on one or two pages, according to the ability of the class.

2. See that all materials (books, pens, slates, pencils, black board, and other necessaries) are ready.

3. Choose a number of words from the portion which has been prepared, and also a short extract from the same piece. (The extract is intended to give practice with short and common words.)

4. Dictate the words *once*, deliberately and distinctly, and give the children time to write them well. Dictate the extract a few words at a time, and from stop to stop in the upper classes. (Unless the stop be other than "a comma," the teacher may thus save himself the trouble of saying what the stop is.) Cultivate careful attention, and avoid repetition in this exercise.

5. Look sharply out to prevent copying. If you detect a chill in this practice, stop his writing at once. (A thoroughly efficient teacher will be able to pass round his class, and give occasional hints on writing. But he must not attempt to do this, unless he can at the same time give the necessary supervision to the whole class.)

6. Allow no rubbing out or altering. If a boy finds out his mistake, it shows that he was not properly careful as he wrote it down. (You may perhaps allow him to underline it himself.)

7. *Examine the work, and be careful not to pass any mistakes.* If the children have been writing on their slates, have the writing turned down to the desk before you begin to examine. Then cause the boys in the first desk to show their slates. Draw your pencil *through* the mistake, and mark the number of errors by a figure "2," &c. After one desk has been passed, have their slates turned down, and proceed to the next, and so on, through the class.

(Set one of your best boys out in front of the class with a paper and pencil, to put down the names of the "two best boys," as you examine).

8. Cause the children to write out each word that has been wrongly spelt, twice in their books, and about six times on their slates.

9. Write out the important words in which mistakes have been made

on the black board, and enter them in a book to serve for future dictation exercises.

10. Look at the work after the mistakes have been corrected. (A general glance at the books of the class and a careful inspection of one or two in a desk, will generally be all that time will now allow you to do.)

11. Prepare for next lesson.

To correct the mistakes of a large class. It will be impracticable for the teacher to go through a large class so thoroughly as has been just recommended, in the limited time at his disposal. He has therefore to adopt some plan by which he can secure the nearest possible approach to such thoroughness. Let him proceed thus:—

1. At the word of command, the boy at one end of the seat stands, and takes up his own exercise, *and that of the boy next him.*

2. At each of the words "one," "two," every boy passes the book before him "one place," towards that end of the desk where the boy is standing. This boy at the same time passes quickly but quietly *in front* of his desk, and carries the *two exercises* to the boys at the other end, and then returns to his place.

(By this plan, the temptation to look upon the next book, instead of that which has been given to the scholar is minimised. Little or no extra time is occupied in the changing, whether the books be passed over *two places* as here recommended, or only *one* as is usually done.)

3. The teacher goes through the exercise, standing in front of the class, and spelling distinctly and in order, all the words in which mistakes are likely to have been made. His previous knowledge of the lesson should allow him to supervise the boys carefully as they correct one another's exercises.

4. After this is over, the same boy may fetch the books, and the other exercises can be returned to their owners at the word of command.

5. Endeavour to see every boy's book after he has made the needful corrections, and look sharply after those pupils who from previous experience you know are likely to require it.

This final examination ought to be as complete as possible. The whole plan can never be so effective as the teacher's own personal examination, and it is likely to provoke slovenliness, or even cheating, unless there be a wholesome dread of detection and of its consequences. Let the teacher therefore look on this final revision with the importance it deserves.

Bear in mind, that in practical life spelling is only required when we write. Oral spelling is rarely asked for

out of school. Note therefore the necessity for frequent *written* exercises, and the importance of rendering the eye familiar with the *appearance* of words.*

* The acknowledged irregularities and consequent difficulty of English orthography, and the impossibility of reducing all cases to a reasonable number of rules, have led to various schemes for modifying the spelling to suit the sound. Into the discussion of this question we cannot now enter. The idea is not by any means new. "Several attempts were made in the 16th century to reform the spelling of English." For centuries, it has been thought "necessary to effect a compromise between orthographical and orthœpical systems."—See *Marsh's Lectures*.

W R I T I N G.

Importance of the subject. 1. The ability to *express our thoughts in writing* is allowed by all to be a desirable attainment. If we are to do this with ease and readiness, we must previously attend (among other things), to the mechanical process of writing.

2. If *others* are to read what we have written, our writing should be legible.

3. In ordinary *commercial life*, free legible handwriting is indispensable.

4. The writing of our scholars has probably more *influence in determining the reputation of our school* than any other subject that we teach.

Almost every parent notices his son's writing, even if he see nothing else, and it is easy for him to judge whether improvement is being made or no. So that the consideration in which our school is held by the outside public, depends very largely upon the amount of attention which we pay to this subject.

5. The *actual character of the school* may be generally estimated with fair correctness after an inspection of the copy-books.

If the books be neat and clean, and there be a *general fidelity to an appointed standard*, we may be sure that the teacher pays attention to the writing. And it will be reasonable to infer that he who bestows the needful care on detail in one subject, will not be careless in the other subjects of school work.

(The writer is confirmed in this opinion by his experience in visiting schools.)

Incorrect notions. There are erroneous ideas abroad on this matter, which ought not to find a lodgment in the minds of teachers. One is, that "*Writing is a difficult subject to teach;*" another, that "*Many people cannot help writing badly.*" The writer has a profound disbelief in both of these dicta.

The difficulty of teaching the subject will almost vanish if the teacher start with clear ideas as to the method of teaching *details*, and a *resolute will*, so that he may get his directions carried out exactly. Too often, the subject is *not really taught*. Teachers "hear the reading" and tell the boys to "*go on writing*," without paying that decided attention to points of detail on which all successful teaching depends.

Of course, there are a considerable number among the millions in the country who "cannot write well," owing to malformation or imbecility. But the percentage of bad writers in a class ought to be very small. Every intelligent boy, who has the command of his limbs, may become a good writer. A visitor to a good school could pick out the new boys by their writing. The writer *knows* that it is possible to secure such an approximation to a uniform standard,—and that not a low one,—throughout a large section, as to render it difficult for a visitor to determine who are the best writers. But this cannot be the case unless the subject is well taught.

Pupil teachers and students, who are required to write a great deal, and with considerable rapidity, frequently fall into a careless "scribbling" style, from which it is difficult for them to extricate themselves. They have habit to overcome, details to unlearn, and other habits and details to acquire before they can write well. "*Primi pannis obsta*," "Withstand the beginnings" of bad habits in this as in other things.

Writing a Mechanical Art. Writing is a mechanical art. We become proficient in it by practice.

We strive to produce certain forms at will. There must be an idea of the form present in the mind; this is furnished by the copy. Then, there must also be "a series of tentatives," or attempts to realize the idea. Our first attempts will almost certainly be clumsy, laboured, and ineffectual, but each leaves "its residuum of added skill," until at length, we are able to perform with scarcely a conscious effort, that which was at first simply impossible.

The natural gifts which are needed are— 1. An eye for form; 2. A sensitive hand ("muscular sensibility").

These gifts are not equally bestowed upon all, but every one has them to some extent, and like all other mental and bodily powers, *they may be developed by practice*. Very little exalted mental power is required. We find among our pupils, that good writers are occasionally dull in other parts of school work.

Marks of Good Writing. Good writing is characterized by *Freedom* and *Rapidity* in its production, and by *Legibility* and

WRITING.

Beauty in its result. These all depend to a large extent upon *Simplicity of Form* in the script characters.

We should aim first at legibility. This is affected by the *shape* of the letters, their *size*, and their *distance from each other*.

Letters should be rounded rather than pointed, should be fairly large, and should be placed at a considerable but uniform distance asunder.

Uniformity is not always an aid to legibility. An "elegant" handwriting is sometimes very difficult to read. But with proper management, uniformity is a chief help to legibility and beauty.

The *beauty* of the writing as a whole, will depend upon its character in detail.

Freedom and rapidity are developed by practice. The mode of holding the pen, and the shapes of the characters, and the mode in which they are joined will be important in this connection.

Details to which the Teacher must attend. The script characters are made up of "*strokes*," "*turns*," and "*junctions*." If these be properly attended to, the writing will be well taught.

I. "*Strokes*" should be uniform in slope, height, and thickness; up-strokes fine, down-strokes firm, and smooth-edged. (This applies of course to corresponding letters only.)

II. "*Turns*" should be of uniform size, (width) and shape. Their forms should be oval, based on the broad ellipse, rather than the circle. The chief faults in writing lie under this head.

III. "*Junctions*" should be placed at a uniform height.

Lessons should be given on each of these points in detail. Suppose the teacher were about to teach boys, other than the veriest beginners, how to make "*small n.*" He should show where to commence the first up-stroke, the direction it should take, the shape and size of the turn, the slope, thickness, and length of the first down-stroke, the place of junction of next up-stroke, until he reaches the point where the last up-stroke ends.

This matter will receive further illustration as we proceed.

The commonest faults in writing may be classed under the same heads.

I. *Strokes.* (a) *Wrong slope*, either too great, or too little, or more commonly not uniform. Call attention to this, and use black board and lead pencil to correct it.

(b) *Not straight.* Both up and down strokes should be taught as "straight." After the teacher finds that his pupils can make straight strokes, he may point out to them that the up-stroke is frequently slightly curved, but that the curvature is so slight as scarcely to affect the straightness of the

stroke. Down-strokes, whether short or long, should always be as straight as though they were ruled, except in curved letters.

(c) *Ragged edges.* This arises from holding the pen so that the nibs are pressed on unequally. It commonly results from resting the side of the hand on the desk instead of the flat part of the wrist or arm, and sometimes from holding the pen itself on one side.

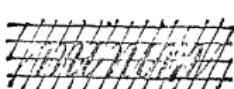
(d) *Unequal thickness* in corresponding strokes or in different parts of the same stroke. It is common to find strokes thickest near the top, or near middle, or near the bottom. To produce a firm uniform down-stroke, rest the pen for an instant at the top of the letter, and maintain the same pressure to the end of the stroke, where the pen should again rest. In this way each end of the down-stroke will be "squared."

II. Turns. (a) "*Too sharp,*" or "*too round,*" (approaching a square model). Attention to the straightness of the strokes is the best practical remedy for this evil. The writer has long been accustomed to give the following rule, although he knows it is somewhat paradoxical:—"Let your strokes be straight and your turns round." This, with a free use of the black board and lead pencil is almost sufficient to secure a good style of elliptic turn.

(b) "*Too large,*" "*too wide,*" This fault often originates in the wrong slope of the strokes. Use the black board and lead pencil to call the pupil's attention to the fault and to remedy it.

(c) *Thick turns* are commonly produced by holding the pen too tight, or from bending the stroke before coming to the actual turn, or more frequently from wrong slope of the pen. They are sure to be formed, if the hand rest upon its side, and the pen be held at right angles to it, a style which some young people affect.

(d) *Unequal in size*, the turn at the top being smaller than that at the bottom, or *vice versa.* This also is a very common fault. One of its consequences is irregularity in the distances between the letters. Call the attention of the pupil to the fault;



set him to write the word "*minim*" from your copy, and after he has done it, let him turn his book bottom upwards to see if "*uinuinu*" are properly shaped.

III. *Junctions wrongly placed.* (On this matter teachers differ considerably. We must bear in mind that our "set hand" ought to be an

introduction to the ordinary "business hand" or to "running hand." Our aim is to give the power of forming well-shaped letters, and the ability to combine them readily. The writer's plan has been to have letters joined in the *middle* in all hands except small hand, and at the *top and bottom* in small hand. [By "middle," "top," and "bottom" is meant those points in the letters *n* or *u*.] The first regulation is intended to aid in forming large shapely letters, the second is the introduction to writing "without removing the pen.") *There should be a rule on this matter*, and teachers ought to insist on its being obeyed.

The comprehensive rules for teaching writing, and for correcting faults are:—I. *Have a plan*; II. *Have your plan adhered to.*

Let your plan be as detailed as is practicable. You must exercise your judgment as to the amount of detail that it is advisable to introduce. *Analysis should never be carried beyond the capacity of the pupil*. In a younger class, it should "not descend to the smallest parts possible, but to the smallest parts which the pupil can appreciate" (*Currie*). But after you have drawn up a well-considered scheme, let actual "*instruction in writing be given* in accordance with it.

The success that follows your efforts will depend upon your force of character. If you form a settled purpose, and set about achieving it quietly and resolutely, you will in time gain your end.

Locke on Teaching Writing. The following quotation is from his work, "*Some Thoughts concerning Education*," published in 1690.

"When [a boy] can read English well, it will be seasonable to enter him in Writing. And here the first Thing to be taught him is to hold his Pen right; and this he should be perfect in, before he should be suffered to put it to Paper: for not only Children, but any Body else, that would do any Thing well, should never be put upon too much of it at once, or be set to perfect themselves in two Parts of an Action at the same Time, if they can possibly be separated." * * * "When he has learned to hold his Pen right, in the next Place he should learn how to lay his paper, and place his Arm and Body to it. These Practices being got over, the Way to teach him to write without much Trouble, is to get a Plate graved with the Characters of such a Hand as you like best: but you must remember to have them a pretty deal bigger than he should ordinarily write; for every one comes by Degrees to write a less Hand than he at first was taught, but never a bigger. Such a Plate being

graved, let several Sheets of good writing Paper be printed off with red Ink, which he has nothing to do but go over with a good Pen filled with black Ink, which will quickly bring his Hand to the Formation of those Characters, being at first showed where to begin, and how to form every Letter. And when he can do that well, he must then exercise on fair Paper, and so may easily be brought to write the Hand you desire."

NOTE.—From this we learn that Locke's method was essentially *tracing*. Almost all compilers of copy-books employ this method to a greater or less extent, at least in the early stages.

Let teachers also note the attention to detail which Locke recommends, and his wise advice, to attend to one thing at a time. Notice also his remark that one's handwriting is likely to become smaller, and hence see the importance of paying attention to the size of the writing of our pupils.

Mulhäuser's Method. "This method consists of three parts: 1. *Analysis*; 2. *Classification*; 3. *Synthesis*. The first two are the duty of the teacher in an elementary school; the last is the work of the pupil."

1. *Analysis* of script characters into their elements. Mulhäuser determines that there are "four elementary parts of letters." "By means of these four principal elements slightly modified, are formed the twenty-six letters of the alphabet." These "elementary parts" are:—

I. "The Right Line."

II. "The Curve Line."

III. "The Loop."

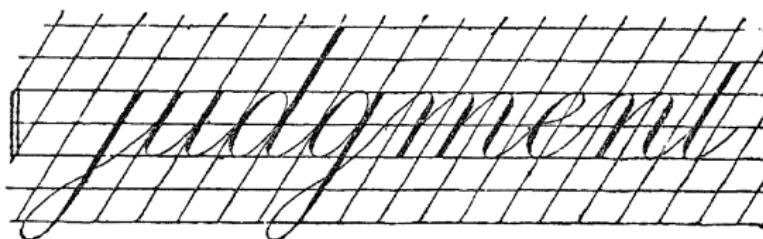
IV. "The Crotchet."

2. *Classification.* The letters are next classified "in the natural order of their simplicity;" those which consist of the same elements repeated or only slightly modified being grouped together. e.g.,—

3. *Synthesis.* “The pupil is then led to combine the elements which the previous analysis had decomposed ; and by this process of construction or *synthesis*, his mental powers are exercised and prepared for the more difficult labours of *analysis* ; his attention is actively engaged ; he thoroughly understands, for he has himself, as it were, formed the object which he studies ; it satisfies, and becomes almost a part of his intelligence.” (The extensive quotations here introduced, are taken from the *Manual* published by the authority of the Committee of Council on Education in 1854.)

Mulhauser’s *copy-books* were ruled in rhomboids, which enabled the pupil to determine the height of the letters, the slope and length of the strokes, the width of the turns, (“hooks” or “links,”) and the place of the junctions.

He made use of various *technical names* for the parts of letters, and after he had taught these parts in separate lessons, he employed *Dictation* very largely, in getting the letters built up from their parts. For example, the word



would be dictated thus :—

| | |
|--|-----|
| Right line two heights, (down) loop, Half-link | (j) |
| Right line, Link,—Right line, Link | (u) |
| Double-curve,—Right line two heights, Link | (d) |
| Double-curve, Right line two heights (down), Loop, Half-link | (g) |
| Hook, Right line, Hook, Right line, Hook, Right line, Link | (m) |
| Loop, Curve, Link | (e) |
| Hook, Right line,—Hook, Right line, Link | (n) |
| Right line, one height and a half, Link, Bar | (t) |

“The teacher does not dictate a letter which can leave the pupil in doubt as to the precise thing that is required of him, but pronounces in succession each element of the letter, which the writer follows, without thinking of the letter itself. These enigmas both amuse the children and accustom them to reflect. This part of the system calls into action the intelligence of the children by an allurement resembling that of a game.”—

Manual.

Note the full and careful attention to details which Mulhäuser enjoins, and the very thorough teaching and supervision that are needed in order to secure the highest type of result.

If the teacher has fully done his work in the preliminary stages, every pupil would know exactly (1) "What to do," and (2) "How to do it." But this is not all that is needed: the teacher ought to (3) "See it done." and this, as has been stated before, depends upon his moral power.*

A modification of Mulhäuser's method is, in the writer's opinion, the best means of teaching writing.

Mechanical Aids. These are a help to the learner in the early stages, but their use ought not to be continued too long. They should aid in developing the natural powers, but after a certain point is reached, these powers are best developed by being called into independent exercise. Mechanical aids, which in the early lessons are an aid to the pupil, may in the end become a source of weakness.

The use of *Mulhäuser's rhomboids* has been already noticed. The writer has for many years had the black boards, and large slates which do duty as black boards, ruled on one side with similar rhomboids, about four inches high. This renders it much easier for the teacher to set a copy or to call attention to faults. The plan has been productive of much good. *Ruled lines* on slates and in copy-books should be used, and the writer thinks it will be desirable to maintain them in use to some extent quite through the school course. Their use will be less frequent as we ascend the school. [It is a good plan to have the slates ruled *on one side only*. The teacher can then employ a plain or a ruled surface at his discretion.]

Tracing. Almost all series of copy-books wisely employ this aid at first. Those in which the help to the pupil is gradually withdrawn, are best from this point of view. [Let the teacher be careful to see that the children really strive to go over the lines for tracing. The writer has seen sad neglect in this matter sometimes.]

* In teaching writing, as in teaching any other subject, there must be in the teacher (1) The power of *grasping his subject* and of manipulating it; (2) The power of *arranging it so as to suit the capacities* of his pupils, and of causing *them* to understand it; (3) The power of *making his pupils do their best*, of causing them to use to the utmost of their ability the knowledge and the powers which they possess. If any youth desires to be a successful teacher, let him strive earnestly to develop these three gifts. He may do this by constant thoughtful practice.

Teacher's own lead-pencil copy for tracing. This is the very best form of copy, provided of course, that the teacher can write well. Boys are incited to strive if they see the copy actually produced, and the lines of the lead-pencil copy do not awe them like the printed "copper-plate." The teacher can also mark over any letter which is badly shaped. A good lead pencil is more easily manipulated, and makes less unsightly strokes than a pen is liable to make when we are in haste.

Plan of an actual Lesson on Writing.

I. To children under seven, (who are learning small and large letters).

1. The teacher should previously go through the alphabet, and arrange the letters in groups, according to the elements required in their construction.

2. He has a black board and its accessories ready.

3. He sees that boys have slates ruled and cleaned, and pencils fairly sharp and of proper length.

4. He sets a copy on the board, *one letter at a time*, in large hand, and calls attention to the shape, size, &c., of *strokes, turns, and junctions*.

5. He holds a pencil as a pattern of the mode in which children should hold their pencils, and requires them to imitate him at the order "Show pencils."

6. He sets the class to imitate the copy he has placed on the black board, and passes round the class to supervise, and to give aid as he finds it needed.

7. Any serious mistake in form should be shown on the black board, together with the mode in which it should be corrected. Less serious mistakes may be exaggerated on the black board, in order to call the attention more pointedly to them:—children at this stage are not able to appreciate minute differences easily. *Use the black board very freely.*

8. When one letter is well made, proceed to the next, until the word is completed. Such words as (1) "tub," "bill," "wilt;" (2) "nun," "plum;" (3) "code," "dace," &c., are types of the class of words that should be set as copies.

9. Figures should be taught singly, and with equal care and attention to detail.

II. A Class which is beginning Small Hand.

The character of the small-hand, will depend upon the thoroughness of the previous practice in large-hand. Small-hand should be taught as "*Large-hand written small*," and with certain new elements and modes of junction. The same careful attention to *the details of strokes, turns, and junctions* must be given as in large hand: in fact as the characters

are smaller, and mistakes less liable to be discovered, the teacher ought to exercise even greater vigilance at this stage.

1. Having made all preliminary arrangements as in the former case, set a short word, such as "*in*" or "*mum*" as a copy upon the black board, calling attention continually to the three chief elements—strokes, turns, and especially junctions.

2. The general plan of supervision and of correcting mistakes will be the same as in the last case.

3. The new elements, *looped letters*, and the conventional forms of the "*g*" () and "*t*" () in small hand, should be made the subjects of special lessons.

4. Insist upon letters being of fair size. The size should be the same throughout the class. (Children are apt to write much too small unless they are checked. If the teacher be careless, small-hand will soon degenerate into "scribble." It is not necessary that a great deal should be written, but it is most necessary that *what is done should be well done*. Let the young teacher remember that the type of writing of the whole school is being formed in the lower classes.)

III. A Lesson on Writing to an advanced class.—
The utmost value ought to be set upon this exercise in this part of the school. The teacher's force of character, and his power as a teacher exhibit their results most prominently here. Pupils who have reached this stage will soon leave the school, and their handwriting for life will bear the marks of this finishing process.

1. In continuation of the previous exercises, lessons should still be given upon *strokes*, *turns*, and *junctions*, as shown in words. The writer has found it quite as necessary to call attention to the "up stroke" and "turn" and "straight down stroke" in the first part of the letter "*n*" at this stage as in the early stages, and this, even when he has been teaching students in the training college. The words will of course be carefully chosen, and may range from "*minim*," through "*coax*" and "*myrrh*," to "*Egypt*" and "*zigzag*."

2. The teacher will call attention to faults which are likely to arise from sitting in an improper posture, or from holding the pen wrongly. For example, he may tell them that "Heavy up-strokes" and "Want of freedom" will result if the pen be held too tight, or too close to the point, and may show them how "Ragged

strokes" and "Curved lines" are likely to follow from *wrongly-sloped pen*, or *improperly-placed hand*.

3. The black board and lead-pencil should be as freely used as before.

4. In teaching a large class, the writer has been in the habit of sending one of the best writers, to act as monitor in each seat of about eight boys. The monitor has a lead-pencil, and shows his weaker class-mates where their writing is faulty, referring any difficult case to the teacher. This plan has acted well, both for monitors and the rest of the class. But the teacher must exercise very careful supervision.

5. Free "*Running-Hand*" may be taught also. All previous exercises should have the easy formation of this style for their object. The chief points which will need care are (1) that the characters should be of fair size, (2) that corresponding letters should be of uniform height, (3) that letters should be set at a fair distance apart. If the pen be then held lightly, and at a good distance from the nib, a free legible style may be formed.

[Young teachers who have much writing to do, are recommended to attend to these three simple rules. If their writing is not easily readable, it is because one or more of these regulations is not attended to. Let them look and see.]

Other General Hints.

1. *It is well to prepare your own copies* (if possible). Facts in History, Geography, and Grammar, form good subjects for copies.

2. *Try to get good materials.* Encourage elder scholars to obtain copy-books of a superior kind, containing business forms, bills, invoices, etc.

3. *Examine all writing books*, copy-books, dictation books, home-lesson books carefully. At the end of every writing lesson, look carefully at the work, and remember that the writing lesson is almost (and may be quite) valueless without proper supervision.

The Head Master should have some plan by which he may know exactly the condition of all the MS. books in use in the school.

4. *Never allow much to be done without its being seen*, and in examining, it will be a good plan for you and the boy, if you make it a rule *always to show some fault, and to have it corrected*.

Many excellent, but no faultless writers, have come under the writer's observation.

5. *Never excuse carelessness* in writing. "Little and well" should be the rule. This applies also to the mode of setting down sums in arithmetic and on slates. Blots and mistakes should be regarded as serious faults.

6. *Use a lead-pencil* yourself rather than a pen, and *mark over* any badly-shaped letter after it is dry. See ante under head "Mechanical aids."

7. *Write neatly yourself on the black board*, and this especially in the lower classes. Try to rule one side of your black board on Mulhäuser's plan.

8. "*Clean neat copy-books* are often the sole index in the parents eyes of the progress of the child."

9. Writing is a mechanical art in which one becomes perfect by practice. *Let there be plenty of practice* of the right kind.

ARITHMETIC.

Its Value. Arithmetic has been styled “the mathematics of the elementary school.”

(a) The *practical value* of a knowledge of this subject *in ordinary life* is obvious to all. Every man has occasion to use arithmetic to some extent, and business men especially must be able to perform their calculations with rapidity and ease. For this reason alone therefore, the teacher should strive to make his pupils “quick at figures.”

(b) But the *study of arithmetic has a special and peculiar value in itself.* It offers the means of developing one side of the mind to a degree which no other ordinary school subject can. It ought, in its measure, to afford the same kind of training in methodical arrangement of ideas, in logical deduction, and in exact and accurate thought, which the more advanced scholar derives from the study of algebra, geometry, and the other mathematics.

Experience has shown that there is a danger of losing sight of this latter value of arithmetical training, or at all events, of not estimating it at a proper rate. As the authors of the “*Science of Arithmetic*” remark, it is possible for arithmetic to “degenerate into a mere routine of mechanical rules for working sums,” a series of processes which they aptly style “conjurings with figures.”

Almost all men are called upon to make calculations in their daily avocations. Comparatively few however, have occasion to use “Compound Proportion,” and “Recurring Decimals,” and “Cube Root. And yet valuable time is spent at school in teaching these and similar rules. Such a practice can only be defended upon the ground that the proper study of such subjects is a useful mental discipline, and that the man is likely to be intellectually stronger after undergoing such a training.

"Sciences are not to be esteemed valueless, although they have no use in themselves, if they sharpen and methodize the judgment."—*Lord Bacon.*

Mathematics are learned, not so much for the practical worth of their facts as for the logical processes through which the mind must pass in learning them. Mathematical study provides the reasoning powers with suitable exercise, and thus strengthens them.

The immediate aim of the Teacher of Arithmetic should have reference to the ultimate value just noticed. He should endeavour to give the pupil skill in grasping the meaning of problems and in interpreting them, as well as accuracy and rapidity in the mechanical work of arithmetic.

"Practice makes perfect." To enable the pupil to grapple successfully with arithmetical problems, it is the teacher's duty to provide numerous duly graduated exercises, and to give him the aid which he requires from time to time. Help will be frequently needed, especially in the early stages.

The teacher must use discretion so as to be neither niggardly nor lavish in the aid which he offers. He should see that the pupil really strives for himself, but he ought to take care that the mental strain is not excessive, either in degree or in duration.

Without directly telling a lad how to master his difficulty, the teacher should help him to help himself, by resolving the apparently insuperable obstacle into a set of minor problems, each of which the boy is capable of overcoming in detail.

Boys ought not to be allowed to sit down hour after hour to a task which they feel to be hopeless. [The writer knew a case in which a boy of 13 was made seriously ill by a protracted strain of this kind. He worked at the same problem in mensuration day after day, and correctly up to a certain point, but was unable to get further, and his teacher, from a mistaken sense of duty, declined to help him.]

At the same time, the healthy stimulus of fair opposition should be offered by the problems, and should be continued long enough for the boy to feel the pleasure of a conqueror, if he can succeed in overcoming his difficulty.

In the mechanical work of arithmetic, accuracy and quickness usually go together, provided, of course, that the teacher sets his face rigidly against hurried carelessness.

Plenty of practical work, with suitable examples, is the great requisite here, and the teacher will have ample scope for the exercise of his skill in constructing such exercises.

In other words, the two points to which the teacher must look are "Reasons," and "Processes." Neither of these should be cultivated at the expense of the other. Skill in arithmetic means skill in both of these departments.

The "*Lesson on Arithmetic*," is the best means of cultivating the first. "*Practical Arithmetic*," and plenty of it, alone can give quickness, correctness, and dexterity in using figures. It is possible to combine both in school work.

Use of Concrete and Abstract Numbers. Young children are unable to abstract *number* from things.

Concrete Examples. A child knows what is meant by "five nuts" or "five cows," long before he can reason about the number "five," and some time even before he can understand what the character "5" stands for. Therefore it is desirable to associate numbers in early arithmetical exercises with the names of common things.

Teachers know how greatly a little child is *aided in his early attempts* at counting, &c., by making strokes on the slate, by using his fingers, and by handling the beads on the bead frame. It is by such exercises that notions of number are formed.

The use of concrete examples should also be continued throughout the school course, because the *ordinary arithmetical problems of common life deal with such examples*, and their use in school tends not only to simplify the school work, but to give it a practical turn. The necessity for their employment becomes less as we ascend the school. But they should be freely resorted to quite through the school course.

Abstract Numbers. "Arithmetic is the easiest, and consequently the first sort of abstract reasoning which the mind commonly bears, or accustoms itself to; and is of so general use in all parts of life and business, that scarce anything can be done without it. This is certain, a man cannot have too much of it nor too perfectly."—*Locke*.

In this short extract, Locke notices three important considerations to be urged on the teacher of arithmetic;—the training it affords for the reasoning powers, its utility in ordinary life, and the necessity for frequent practice in order to render arithmetical training valuable to the learner.

Abstract numbers may be used in all those exercises which have for their object the increase of the pupil's dexterity in manipulating figures. In teaching the actual processes of arithmetic, there is no necessity to employ concrete examples. The mistake which is often made in arithmetical teaching consists in the too exclusive attention to processes in which abstract numbers are employed, so that the arithmetic lesson fails to supply all the mental discipline that it may be made to

afford, and does not fit the pupils to meet the practical problems of daily experience with readiness. *But processes ought to be taught as such*, and in these lessons on processes, abstract numbers may be used with propriety.

Mental Arithmetic. This exercise cultivates quickness in seizing the point of a problem, concentration of mind in dealing with it, and skill in adapting and using devices in the almost infinitely varied problems that may be proposed. It ought to occupy a prominent place in the school time-table. The ordinary practical arithmetic would be more satisfactory if sufficient practice were given in mental arithmetic. After leaving school, the greater part of the calculations one is required to make, have to be done mentally.

Those who are most successful in teaching arithmetic, will generally be found to employ mental arithmetic largely. The subject is usually popular with boys, and forms an agreeable change after almost any other kind of school work.

The practical value of the subject in ordinary business is universally allowed, and those who have watched the employés in our London warehouses as they "extend" their invoices, hardly know which to admire most, the wonderful accuracy and rapidity of the calculators, or the extent to which business is facilitated by their skill.

Like all other subjects, mental arithmetic should be taught.

Lessons should be given on rules and the reasons for them, and then numerous suitable examples, graduated in difficulty, should follow.

The teacher should provide himself with a good text book, and should study the rules for himself, so that he may introduce them to his boys in proper order, and with proper effect. (A paper on mental arithmetic is set in the certificate examination, and the candidate will rarely be able to work this paper creditably, unless he has had considerable practice in mental work before he enters the training college.)

Mental exercises, generally involving concrete examples, should be employed in introducing a new rule in arithmetic, and should increase in difficulty until the learner finds it necessary to resort to the use of slate and pencil. If the boys be allowed to set down the results of their mental calculations up to a certain point, and be then allowed to perform the more complicated work on a slate, intelligent work is encouraged, and more interest is evoked in both mental and written arithmetic. The mental arithmetic lesson should be brief, the strain should

not be kept up too long. Mental arithmetic should not come immediately after a fatiguing lesson.

The tables of weights and measures, the money table up to 2400 pence, (by fifties or hundreds after 200 pence,) and the multiplication table up to 20 times should be learned. The writer has allowed the repetition of these tables to form part of Friday afternoon's work in his schools, and it is astonishing to those who have never tried it, with what comparative ease these extended and difficult tables are acquired by boys. They should be used very freely in the mental arithmetic, and the thoughtful teacher will be able to produce good results in this way.

Hints and Directions for a Pupil Teacher who is about to give a Lesson in Arithmetic.

1. The general plan of a *Lesson on a New Rule* should be:—

(a) Mental exercises, short, rapid, generally concrete, increasing in difficulty.

(b) Similar exercises worked on black board by the teacher, to lead up to rule.

(c) Educe the rule.

(d) Apply it to other examples, proceeding from simple to difficult, on the black board.

(e) Test boys by requiring them to work many similar examples on their slates. Always supplement your explanations by testing.

2. In an ordinary *Arithmetic lesson* to a large section, when the boys have some knowledge of the rule they are working, but when they manifest great differences in their ability to work examples upon it:—

(a) Work an illustrative example upon the black board, as short as possible, provided it be effective.

(b) Set a similar example to be worked by the class, after making proper arrangements to prevent copying, and keep a sharp look-out yourself, to see that all make an honest attempt to do it.

(c) After giving a reasonable time, cause slates to be shown; pass rapidly round the class and see whether it will be necessary to give a fresh lesson to the whole class, or whether the majority of the boys are in a fair way to solve the question. In the latter case, call out the dull scholars and let them bring their slates. Show them again, and cause them to make a fresh attempt for themselves. Those who now seem to understand, should be sent back to their place to work with the bulk of their classmates. This process of elimination should be continued, until but two or three very dull boys are left. The teacher will be able to concentrate the greater part of his attention upon these on other occasions,

until they also can acquit themselves fairly. He should cause such dull boys to sit where he can easily supervise them, and he may set himself free to devote his attention to the rest of the class, by using some of his sharpest lads as monitors to attend to the dullards, when these sharp boys have finished their own work.

(d) Every boy must have "something to do" all the time. After he has finished his work, let him sit or stand in accordance with an understood rule, and remain perfectly still. But you must be on the look-out, so that no boy may waste his time by being unemployed at arithmetic, during the time set apart for the arithmetic lesson. *All members of the class should be usefully employed throughout the lesson.*

(e) Your duty is to see that all the boys know how to do their work, and to see that that they do it. To this end you must show and explain frequently, not assuming that they all know how to proceed because most of them do, or because you know yourself, or because you "have told them." In fact it is often advisable to assume that the rule is not understood, and to proceed to careful and detailed explanation in consequence. You ought to repeat your explanatory lessons frequently, and your use of the black board should be constant. *This is in fact the most important point of all in teaching arithmetical processes.* Teachers cannot well make their explanations too simple, or use the black board too freely, especially in the lower classes, if they can but secure honest endeavour on the part of their pupils. The rest of the matter, the causing boys to try their utmost in working at their sums, depends, as in all other such cases, upon the hold which you have acquired over them, and upon your power of getting work out of them.

3. Use problems involving the use of concrete and abstract numbers.

Each should be used in its place, and in accordance with what has been said previously (p. 73.)

4. When using numbers, read their answers in words.

Endeavour to keep up a knowledge of notation and numeration in this way. You should often frame your exercises with this view.

5. Encourage neatness and care.

Remember that quickness and accuracy usually go together in arithmetic. *Do not however confound hurry with rapidity.* A certain amount of painstaking in shaping the figures and ruling the lines, is really an aid to accurate work.

6. Allow no copying. The teacher will succeed in stopping this evil if he always treats it as a serious offence, and if he can impress his boys with the idea that *they are sure to be detected* if they are guilty of it. A shrewd, lynx-eyed, and powerful teacher, in a class of but moderate size, may, if he chooses, prevent it by sheer determination. But in daily work, with a large section, and with teachers of ordinary power, arrangements should be made which will *render it impossible for the boys to copy* from one another. This is the only way in which honest work may be certainly.

Supposing that the discipline of a large class is good, a plan of this kind may be adopted:—Cause the boys to sit at a fair distance apart and so that each boy in one desk or seat is exactly behind his fellow in front. Pass along the front desk, and call alternate boys A and B; tell “A boys” to stand, and cause all those immediately behind them to stand also. You thus divide your section into two groups, and no two members of the same group are very close together. By acting in this way with alternate desks, and introducing A, B, and C, or A, B, C, and D, you may secure any necessary isolation. But note, that *the more powerful the teacher, the less the necessity for complicated devices.* Having divided the section thus, each set of boys should have a different sum. A sharp teacher may secure the necessary variety in addition, by altering the arrangement of the same addends, and by giving one different addend to each set. In subtraction either minuend or subtrahend may be altered. In multiplication one of the factors may be halved or doubled, &c., and so with division. By such arrangements the teacher can obtain several answers easily, and will have time to exercise proper supervision, which would be impossible if the sums be altogether different, and if he work out each separately.

It is desirable to insist upon *silent* work at arithmetic. A word from a classmate is often enough to prompt a boy who is in a difficulty, and the teacher is thus liable to be deceived as to the real knowledge of the pupil. When boys “mumble” as they work, some are almost sure to obtain surreptitious aid.*

7. Encourage boys to use short methods and extended mental work.

* Perhaps there is no detail of school work in which the difference in the power of teachers is more manifest than in this matter. The writer has had the opportunity of noticing this with students in the practising school, when a weak teacher follows one who is well up to his work. The mischievous effects of loose discipline are almost sure to appear here first.

Try to connect mental and written arithmetic. For example, the elder boys should multiply by 25 or by 125 in one line, and by $\underline{2,884,816}$ in three lines, exclusive of the answer. Encourage "canceling," and all concise modes of working. *Do not, however allow a boy to rub out his actual work;* and, as copying becomes easier when there is but little to copy, you must use greater vigilance in preventing it.

8. Short examples are generally the most useful in practical work.

Such examples are sufficient to show whether the pupil understands principles or no; a mistake in calculation does not involve the same amount of disgust in the pupil who has to alter his work in consequence of it; more work will be done by the whole class in the same time. (Lazy teachers sometimes give long sums to save themselves the trouble of frequent examination.)

But it is well sometimes to give a long sum to test general accuracy. If such an exercise can come a few minutes before twelve o'clock, and boys be allowed to go home as they finish their sum, a good effect is almost always produced.

9. Encourage boys to prove their work, either by the usual methods, or better, by working the same exercise by an independent method.

A sum in subtraction or division should rarely be passed without being proved. The teacher must see that the pupil *does* go through the needful operations and does not merely copy a certain row of figures, or manipulate them so as to fit. *No sum should be passed until it is correct.*

10. Be careful to examine each boy's work properly.

Pass round the class whilst they are at work, explain and shew where it is necessary, and at the end of the lesson have slates shown, and examine every boy's work. *Personal contact of the pupil with the teacher is needed in all school work.* The final cursory examination of the sums is not enough in arithmetic, it should supplement not supersede the previous individual examination.

11. Arithmetic books. It is well for boys to have text-books of their own, which contain a large number of suitable examples. Good and cheap books of this kind are numerous now.

The teacher should set sums on the black board to be worked by the "A and B boys," and should tell them where to go on from their books, *after they have finished the sum which he has given;* e.g., "A's to begin at No. 13, on page 17, and to work the sums with odd numbers, B's to work those with even numbers, beginning with No. 14." Those boys who succeed

in getting the original sum correct, and in doing a large number of other exercises, should have an "extra" mark on the mark slate. The use of the first sum is to test the back work, and of the book work to keep all usefully employed at suitable examples. With proper supervision the teacher may allow boys to work on steadily through their books, and the sharpest lads will make more rapid progress in this way. Care must be taken that difficulties are not shirked by dishonest pupils. The teacher must mark the books with a mark difficult to be imitated, or must tell the boys where to begin on every occasion.

12. Try to get boys to work at rules which embody several others.

For example,—*Long Division* proved by multiplication, furnishes an exercise in all the simple rules; *Rule of Three*, may be made to give practice in Reduction of Money and of Weights and Measures; the *Mensuration* of Triangles leads boys to see the use of Square Root, &c.

13. Let your language be precise, exact, and definite.

This is an important matter in an exact science like arithmetic, although teachers sometimes do not regard it as such. It is not uncommon to hear one number described as so "much greater" instead of as so "many times greater" than another, or to hear a Vulgar Fraction thus spoken of.—"The denominator shows how many *parts* the whole is divided into, and the numerator shows how many of these parts are taken." The word "*equal*" should be inserted before the italicized word "*parts*" in this case. No teacher ought to regard such matters as trivial; he will not fail into this error after he has made fair progress in mathematics. (Cases have come under the writer's observation in which students have failed to secure so high a mark as they would otherwise have obtained, from carelessness on this very point.)

Special Methods to be employed in the common rules of Arithmetic.

In the following hints an attempt is made to show that it is possible to teach arithmetic in accordance with the principles which have been enunciated in this paper. The writer's experience has convinced him that sounder knowledge is acquired, and more rapid progress is made in the end by teaching arithmetic in this way than by teaching it empirically, and he has proved the practicability of every one of the following methods. At the same time it must be distinctly understood that other teachers will find it necessary to modify and amplify these plans in their own case; much more elucidation and many more examples will be needed in actual teaching. These hints are intended to give direction to the teacher's own thoughts; they will be but

a poor substitute for thinking on his part. They are all more or less fragmentary, and only aim at suggesting the general plan on which the different lessons may be given.

NOTE.—*Children should not begin to "work sums" until they can count up to 100 at least.*

I. Notation and Numeration should be taught together.

(a) *Numbers up to 10* should be taught first. Use the bead frame to show what the characters mean.

(b) *Two figures.* (1) *Up to 20*, by showing each in turn, requiring the children to read and to write it, and using the bead frame.

(2) *From 20 to 99*, in the same way, except that the use of the bead frame may generally be dispensed with. Give practice with such numbers as 18 and 81, 61 and 16, &c.

(c) *Three figures, in all possible combinations.* (Young children ought not to be expected to understand formal lessons on the "*Device of place*." The teacher will prepare the ground for these and will secure more rapid progress in this early stage by giving examples rather than reasons.) This is the most important stage of all. Stages *a* and *b* being mastered, many exercises in setting down numbers of three figures, and in reading such numbers should be given. The 0 should be introduced, and its value shown in all places which it can occupy, 100, 010, 001. Children should be required to set down "*five, in three figures*" (005), "*Twenty in three figures*" (020), and similar examples should be given until the children are perfect.

(d) *All higher numbers* are read and should be set down in periods of "threes." It is as easy to proceed to "millions," as to go on to "thousands," if stage *c* be mastered. Boys should at first be required to set *three figures in each column*, and to put "millions" and "thousands" in their proper column. The 0's on the left, which are not needed, may be rubbed out, and commas (,) may be substituted for the vertical lines as the children become expert.

M T U

When they are desired to *read* numbers, they should be taught to *mark the numbers off in threes*, beginning with the units; reading is then easy.

Of course the teacher will not stay to teach boys to set down and to read these high numbers, before he begins to teach addition and subtraction. Numeration and notation should be taught incidentally for the most part, although formal lessons will sometimes be needed.

ARITHMETIC.

II. **Addition.** (a) *Plenty of work at processes* is the great desideratum with such young children as are commonly learning to add.

(b) *Mental exercises* with numbers less than 10, until children can at once tell the sum of any two of these numbers. *They should be allowed to count from the bead frame, or on their fingers, which "seem to have been provided for this purpose," whenever a difficulty arises.* Use concrete numbers.*

(c) *Exercises involving three or four digits and numbers containing two figures* may follow. This is the proper place for introducing slates, and working on the black board. *Show the objects on the bead frame, and the corresponding figures on the board.*

(d) After the children have become familiar with easy numbers, those which are more difficult should be taken. *Exercises of this character should be continued until the child has acquired fair practical skill in adding.*

(e) After this point has been gained, the "*Lessons on Principles*" should be given. Theoretically these should come first, but they would be practically incomprehensible until the children have acquired some idea of number, and this is picked up insensibly whilst they are working at the foregoing exercises.

Decompose the addends:

7495 is 7 thousand 4 hundred 9 tens and 5,

1869 is 1 thousand 8 hundred 6 tens and 9.

Add each column separately, and we obtain:—

8 thousand 12 hundred 15 tens and 14.

But:—

14 is equal to 1 ten and 4 units

15 tens are equal to 1 hundred and 5 tens

12 hundred are equal to 1 thousand and 2 hundred

8 thousand are equal to 8 thousand

| T | II | T | U |
|---|----|---|---|
| | | I | 5 |
| I | 2 | | |
| 8 | | | |
| 9 | 3 | 6 | 4 |

If the sum of any of the columns were more than 9, that number should be decomposed as above and the proper part added to the next column. Suppose the total had been 7 thousand, 15 hundred, 13 tens, and 4, we should have—

* Counting is *not to be encouraged*; the teacher should *allow* it only when the child is in doubt, and only because it enables the beginner to *be sure he is right*, a point which cannot be too strongly insisted on in Arithmetic.

SCHOOL METHOD.

| | T | H | T | U |
|--------------------|---|---|---|---|
| 4 tens | | | | 4 |
| 13 tens are | | 1 | 3 | |
| 15 hundreds are .. | 1 | | 5 | |
| 7 thousands are... | | 7 | | |
| | | | 6 | 3 |
| | | | | 4 |

"Long Addition is the most difficult process in arithmetic." All the exercises should be very short with young children, and the teacher should show them how to work every sum on the black board.

III. Subtraction. (a) *Addition and Subtraction of mental exercises should be taken together.* "4 and 7 are 11;" "the difference between 11 and 7 is four." This should go on until they know the sum and difference of any two easy numbers. The teacher should start with 10 objects (beads or nuts,) and subtract successive numbers; then take another minuend and proceed as before, taking care to bring out the connection between addition and subtraction, by alternating the exercises. Use concrete numbers very freely.

(b) *Similar exercises should be worked on the black board.* These exercises should be framed in such a way, that the children may be led to see that we subtract the whole number when we subtract all its parts. They should work such sums as these:—

$$\begin{array}{l} 17 - 2 \\ 17 - 5 \\ 17 - 12 \end{array} \quad \begin{array}{l} 28 - 3 \\ 28 - 14 \\ 28 - 25 \end{array} \quad \begin{array}{l} 368 - 111 \\ 368 - 223 \\ 368 - 308 \end{array} \text{ and many more.}$$

Next, they should be led to see that it is impossible to subtract all numbers in parts from the corresponding parts of other numbers. The necessity for some rule for "borrowing," or for decomposing numbers is shown by examples such as these:—

$$\begin{array}{l} 356 - 125 \\ 356 - 156 \\ 356 - 157 \\ 356 - 167 \end{array} \quad \begin{array}{l} 631 - 630 \\ 631 - 530 \\ 631 - 532 \\ 631 - 458 \end{array} \text{ and others.}$$

ARITHMETIC.

(c) The children are now ready to receive the explanation of one of the ordinary methods of working subtraction. The more simple exercises should be taken first, so that the bead frame may be used in explaining the decomposition of numbers, and in shewing that the differences between two numbers is unaltered, if we add the same number to each.

I. Method of Decomposition. Take 29 from 42. With the bead frame show that... 42 is { 4 tens and 2
or { 3 tens and 12 }
and that 29 is 2 tens and 9 }

so that the difference required is 1 ten and 3
or 13.

Show the same process on the black board, and proceed to other examples, when you think the principle is understood: e.g.,

563 is 4 hundred and 15 tens and 13.
384 is 3 hundred and 8 tens and 4.

The diff. is 179 or 1 hundred and 7 tens and 9.

2. Method of Equal Additions. Preparatory exercises will be needed. With the bead frame show that the difference between 9 and 4 is the same as that between $(9+1)$ and $(4+1)$

$$\begin{aligned} &(9+7) \text{ and } (4+7) \\ &(9+10) \text{ and } (4+10) \end{aligned}$$

and so on with other easy numbers.

Now propose such a question as, "What is the difference between 29 and 42?" The children should be prepared to see that $42 - 29 = (42+10) - (29+10)$ by showing the process upon the bead frame. The ordinary method by which 29 is taken from 42 in practice should then be gone through upon the black board.

For 42 we take 4 tens and 12 = 52
and for 29 we take 3 tens and 9 = 39

The difference 1 ten and 3 = 13

Or, the difference between 42 and 29 is the same as that between 52 and 39.

Another example:—

For 342 we take 3 hundred 14 tens and 12 = 452
and for 179 we take 2 hundred 8 tens and 9 = 289

The difference 163 is 1 hundred 6 tens and 3 = 163
Or, the difference between 342 and 179 is the same as that between 452 and 289.

The teacher will find it necessary to analyse many examples before his young pupils will be able to see the reasons for the processes they use.

(d) *Cause the children to prove their sums.* If Addition and Subtraction be taught in connection, it is easy to show the reason for this process. But do not allow the children merely to *copy* the minuend for a "proof."

IV. Multiplication. Boys should learn the ordinary multiplication table by heart, and should repeat it frequently. In the lower classes, "Tables" should occupy a considerable part of the school-time, and the multiplication table should be attacked from the first.

Good mental exercises may be made thus:—Write a number, say 546, on the black board, cause the children to multiply any two of the digits together, and to add the other to the product. If a column of such numbers be written, a class may be kept at work for a considerable time. *The advantage of this plan is that the children are made to go through processes similar to those required in ordinary multiplication, and are well tested in their tables.* It will be seen that three or even six such problems can be made from a number containing three figures. If there be four figures in the number, the problems which can be made from it are far more numerous. Let the teacher try it. (This plan was suggested to the writer, by Mr. Smith, the Vice-Principal of the Borough Road Training College. It answers well in practice.)

(a) *Mental exercises and bead frame and black board* to show that multiplication is a shortened form of addition.

$$\begin{array}{r} 1 \\ \times 3 \\ \hline 3 \end{array} \quad \begin{array}{r} 3 \\ \times 3 \\ \hline 9 \end{array} \quad \begin{array}{r} 8 \\ \times 5 \\ \hline 40 \end{array}$$

"ones" are 3 "threes" are 9 "eights" are 40.

40

(b) Boys are supposed to know how numbers may be decomposed, and also to know their tables. *Work an illustrative example, e.g.:—Multiply 3647 by 3.*

3647 is 3 thousand 6 hundred 4 tens and 7
Multiplied by 3

or 10941 is 9 thousand 18 hundred 12 tens and 21.

Show the "carrying" thus :—

| | T | H | T | U |
|----------------------------|----|---|---|---|
| 9 thousands are | 9 | | | |
| 18 hundreds are | 1 | 8 | | |
| 12 tens are | | 1 | 2 | |
| 21 units are | | | 2 | 1 |
| | 10 | 9 | 4 | 1 |

Or, the process may be thus shown :—

$$3000 \times 3 = 9000$$

$$600 \times 3 = 1800$$

$$40 \times 3 = 120$$

$$7 \times 3 = 21$$

$$\begin{array}{r} 3647 \times 3 = 10941 \\ \hline \end{array}$$

(c) Work the same and similar examples on the black board in the ordinary way: e.g.,

3647

3

10941

And then set the boys to practical work of the same kind.

(d) Introduction of 0 into the multiplier.

1. Multiply in turn 1, 2, 3, &c., 12, 13, 19, 75, 693, &c., by 10, to show that this operation may be performed by adding 0 to the multiplicand.

2. With similar easy numbers, proceeding to difficult, show that two ciphers added to the right of the multiplicand multiplies it by 100, three by 1000, &c.

3. Show that $20 = (10 \times 2)$ and that we multiply by 20 by multiplying first by 10, as above, and then by 2. Lead the boys on to such exercises as 5974×8000 , which should be worked thus :—

$$\begin{array}{r} 5974 \\ \times 8000 \\ \hline \end{array}$$

$$47792000$$

(*i*) *Multiplier to contain two or more figures: e.g.,*

$$\begin{array}{r} 7519 \times 543 = 7519 \times 500 = 3759500 \\ \quad + 7519 \times 40 = 300760 \\ \quad + 7519 \times 3 = 22557 \\ \hline 4082817 \end{array}$$

Then show this process in the ordinary way and give examples to be worked by the boys.

$$\begin{array}{r} 7519 \\ \times 543 \\ \hline 22557 \\ 30076 \\ 37595 \\ \hline 4082817 \end{array}$$

(*f*) *Multiplier broken up into factors.* With illustrative examples show that we multiply by a number when we multiply by its factors: *e.g.*,

$$\begin{array}{rl} 519 \times 12 & = 6228 \\ 519 \times 6 \times 2 & = 6228 \\ 519 \times 4 \times 3 & = 6228 \\ 519 \times 2 \times 2 \times 3 & = 6228 \end{array}$$

Encourage boys to work such exercises by different sets of factors where it is possible, and thus to prove their work.

It is a good preparation for Compound Multiplication to cause the boys to analyse the multiplier in simple multiplication and then work their sum in two or three ways: *e.g.*,

$$\begin{array}{l} 79 = (8 \times 10) - 1 \\ = (12 \times 6) + 7 \\ = (9 \times 8) + 7 \\ = (9 \times 9) - 2 \end{array} \left. \right\} \text{and so on.}$$

V. Division should be connected with multiplication. The multiplication tables should serve for exercises in division.

(*a*) *Mental Exercises* should be taken first to give facility in the subsequent processes. The skilful teacher will now be able to introduce great variety into his questions. To take one instance of dealing with abstract numbers among many that might be given.

3 times 12 are 36
How many 3's in 36
One-third of 36
Two-thirds of 36
One-twelfth of 36

ARITHMETIC.

Five-twelfths of 36

Two-twelfths of 36

One-sixth of 36

Two-sixths of 36

One-third of 36, &c.

[See "Crossley's Calculator," for examples of what may be done with a number in this way.]

Such exercises would prepare boys to appreciate and to comprehend the subsequent lessons on fractions.

Questions on the money tables, and the tables of weights and measures should be freely given.

(b) Show that Division is a shortened form of Subtraction, and the opposite of multiplication.

"In multiplication you have a number of heaps, with the same number of pebbles in each, and you want to know how many pebbles there are in all. In division you know how many there are in all and how many there are to be in each heap, and you want to know how many heaps there are."—*De Morgan.*

Addition and Multiplication.

$$\begin{array}{r} 3 \\ 3 \\ \hline 6 \\ 3 \\ \hline 9 \\ 3 \\ \hline 12 \end{array} \quad \text{"Four 3's are 12."}$$

Subtraction and Division.

$$\begin{array}{r} 12 \\ 3 \\ \hline 9 \\ 3 \\ \hline 6 \\ 3 \\ \hline 3 \\ \hline \end{array} \quad \begin{array}{l} \text{"There are four 3's in 12."} \\ \text{in 12.} \end{array} \qquad \begin{array}{r} 17 \\ 5 \\ \hline 12 \\ 5 \\ \hline 7 \\ 5 \\ \hline 2 \\ \hline \end{array} \quad \begin{array}{l} \text{"There are three 5's in 17."} \\ \text{17, and 2 remain."} \end{array}$$

(c) Work an illustrative example, and in it try to connect both Short and Long Division. e.g., Divide 65301 by 7. Now "we divide one number by another, when we divide each of the parts of the one by that other." So that if we break up 65301 into suitable parts, and divide each of these parts in turns by 7, and add the quotients together, we shall obtain the quotient of 65301 divided by 7.

$$\begin{array}{r} \text{Now } 65301 = 63000 \left\{ \text{which contains } 7 \right. \\ \quad + 2100 \left. 9000 \right\} \text{ times} \\ \quad + 140 \left\{ \text{, } \right. \\ \quad + 56 \left. 20 \right\} \text{, } \\ \quad + 5 \left\{ \text{, } \right. \\ \quad \hline \end{array} \quad \begin{array}{r} 9328 \\ \text{times and 5 are left.} \end{array}$$

Therefore 65301 contains 7 9328 times and 5 are left.

This may, perhaps, be made clearer by writing thus:—

63 thousands contains 7 9 thousand times,
21 hundreds , , 3 hundred times, &c.

SCHOOL METHOD.

If this plan be adopted it should be taken first, and the process indicated above should then be set down on the black board.

Write out the ordinary process at length, thus :—

7 is not contained in the first figure 6, but the first and second figures 65 contain 7 nine (9) times, with 2 remaining.

But so also 65 thousands (65000) contain 7 nine thousand (9000) times and two thousands (2000) are left.

$$\begin{array}{r}
 7) 65301 \quad (9000 + 300 + 20 + \\
 \underline{-} 63000 \quad \text{or } 9328 \text{ with } 5 \text{ over} \\
 \hline
 2301 \\
 2100 \\
 \hline
 201 \\
 140 \\
 \hline
 61 \\
 56 \\
 \hline
 5 \text{ over}
 \end{array}$$

Subtract 9000 times 7 from 65301, i.e., subtract 63000, and we have 2301 left.

Proceed in the same way with this remainder. 7 is contained in 23 three (3) times and 2 over. So that 7 is contained in 23 hundreds (2300) three hundred (300) times, and two hundred (200) are left. Subtract 300 times 7 from 2301, i.e., subtract 2100 and 201 are left.

In the same way show that 201 consists of 14 tens and 61, and contains 7, two tens (20) of times with 61 left.

Lastly, 61 contains 7 eight times, with 5 left.

Add all the quotients as above.

It will be observed that this process is that ordinarily known as "*Long Division*." But we really go through the same process in "*Short Division*," although in this latter case the divisor is so small, that we can readily calculate its multiples, and subtract them from the corresponding parts of the dividend.

(d) *Work the same example by ordinary "Short" division.*

$$7) 65301$$

$$\underline{9328} + 5$$

(e) *Give other examples to be worked by both the "Long" and the "Short" methods, and show the pupils that the ciphers need not be set down when they are skilful enough to do without them.*

The above is, perhaps, the best method of teaching the *principle* of this rule. Most practical teachers prefer to begin with Short Division, and to teach it empirically, and afterwards to go on to Long Division. But in any case, an attempt, or even repeated attempts if necessary, should be made, to lead boys to see the reasons for the processes they adopt. It would take a longer time

ARITHMETIC.

for boys to get to work at the rule if the plan herein laid down be adopted, but the work would be intelligent, and progress would be more rapid in the long run.

(f) If the Divisor be broken up into its factors, boys are likely to have a difficulty with the remainder. This will be obviated if the teacher can give them a clear idea of the value of each line.

e.g. Divide 74393 by 28

7) 74393

4) 10627 sevens + 4 units

2656 twenty eights + 3 sevens + 4 units
or 21 + 4
or 25

Then enunciate the rule for finding exact remainder, and give other examples.

(g) Multiplication and Division by mixed numbers.

1. If **Multiplication** has been taught as a mode of addition, it is easy to show that $5\frac{1}{4}$ times 64 is equal to 5 times 64 added to one-quarter of 64, and so of other similar cases. If the multiplier contain a difficult fraction the teacher should lead the way up to it by giving mental exercises similar to those in (a) and set the same on the board; e.g.,

$$\begin{aligned}
 \frac{1}{12} \text{ of } 36 &= 3 \\
 \frac{1}{12} \text{ of } 36 &= (5 \times 3) = 15 \\
 \frac{1}{12} \text{ of } 36 &= (7 \times 3) = 21 \\
 8\frac{7}{12} \times 36 &= (8 \times 36) + (\frac{7}{12} \times 36) \\
 &= 288 + (\frac{1}{12} \text{ of } 36 \times 7) \\
 &= 288 + 3 \times 7 \\
 &= 288 + 21 \\
 &= 309
 \end{aligned}$$

He may prepare the way for the more difficult case in which the denominator of the fraction is not contained exactly in the multiplicand by shewing that

$$\frac{5}{12} \text{ of } 36 = \frac{1}{12} \text{ of } (5 \times 36)$$

Then he may *educe* the ordinary rule for multiplying an integer by a fraction.

2. The reasonableness of the plan which is adopted in the corresponding case in Division may be thus shown:

$$\begin{array}{r} 2 \quad 6 \\ 2 \quad 2 \\ \hline 4) 12 \\ \hline 3 \end{array} \quad \begin{array}{r} 2 \quad 6 \\ 3 \quad 3 \\ \hline 6) 18 \\ \hline 3 \end{array} \quad \begin{array}{r} 2 \quad 6 \\ 4 \quad 4 \\ \hline 8) 24 \\ \hline 3 \end{array}$$

i.e. Multiply Divisor and Dividend each by the same number, 2, 3, 4, 5, &c., in succession, and show that the quotient in each case is the same.

Take similar examples with another divisor and dividend, if necessary and thus lead the way to such cases as $75 \div 2\frac{1}{2}$, $99 \div 2\frac{1}{2}$, $85 \div 3\frac{2}{3}$, &c.

Be careful to let the boys understand the value of each line, or they will have a difficulty with the "Remainder."

VI. Reduction. The simpler cases should be taught as soon as boys are perfect in multiplication and division of whole numbers. Their subsequent work at the compound rules is thus simplified, and they put the knowledge and skill they have acquired to practical use.

In Reduction the object is to express the same value under different denominations. In teaching it, *the teacher must endeavour to show the denomination of each line that is obtained by the various processes.* If he can succeed in getting his pupils to see this clearly, and to use their thoughts properly, all the simpler cases of this rule can be easily mastered. Plenty of work at illustrative examples is his best resource in order that he may gain this end. In all the processes of Reduction, whether "ascending" or "descending," cause the boys to write the proper denomination opposite to each line: e.g.,

1. Reduce £5 9 7½ to half-pence.

| |
|-----------|
| £. s. d. |
| 5 9 7½ |
| <u>20</u> |

| |
|---------------|
| 109 shillings |
| <u>12</u> |

| |
|------------|
| 1315 pence |
| <u>2</u> |

2631 halfpence Ans.

2. How many half-crowns in 5500 farthings?

4) 5500 farthings

3,0) 137,5 pence

45 + 25
H. Cr. + pence

The more difficult cases should be taken with and after the Compound Rules.

VII. Compound Rules. Money, and Weights and Measures. Some teachers teach the Compound Rules *with* the corresponding Simple Rules, Compound Addition with Simple Addition, &c.

In principle, this is the best method, and there are teachers who achieve good results by this plan.

More commonly, the Simple rules are first taken, and then the compound, as it is found in practice that skill in Simple Multiplication and Division is a great help in all Compound rules.

In any case, the teacher must try to make clear the "principle of carrying," and to show its extension to the several cases that occur in dealing with Money and Weights and Measures. If this be well understood, the boys will find little trouble in proceeding to the Compound Rules, especially if they have passed through the Simple Rules in the way we have recommended.

The writer has proposed the following question to pupil teachers and students on more than one occasion: "*Assuming that a class of boys know how to work Simple Addition, and that they know their tables, frame a series of questions (with their probable answers), to show that it is possible to lead boys to discover the rule for Compound Addition for themselves.*" He now offers this as an exercise for pupil teachers, and advises them to show the connection between other Simple and Compound Rules in the same way. The following hints may be useful.

| | 10 | 10 | 10 | | 20 | 12 | 4 | f. | s. | d. |
|----|-----|-----|----|----|-----|-----|-----|----|----|----|
| T | H | T | U | L. | S. | d. | q. | 5 | 9 | 8 |
| 5 | 9 | 8 | 3 | 5 | 9 | 8 | 3 | 5 | 9 | 8 |
| 6 | 1 | 2 | 2 | 6 | 1 | 2 | 2 | 6 | 1 | 2 |
| 8 | 4 | 1 | 1 | 8 | 4 | 1 | 1 | 8 | 4 | 1 |
| | 7 | 2 | 0 | | 7 | 2 | 0 | | 7 | 2 |
| 19 | 21 | 13 | 6 | 19 | 21 | 13 | 6 | | | |
| | 2+1 | 1+3 | | | 1+1 | 1+1 | 1+2 | | | |
| 21 | 2 | 3 | 6 | 20 | 2 | 2 | 2 | 20 | 2 | 2 |

| | H | T | U | | L. | s. | d. |
|-------------------|----|---|---|---|----|----|----|
| 19 Thousands are | 19 | 0 | 0 | 0 | 19 | 0 | 0 |
| 21 Hundreds are | | 1 | 0 | 0 | 1 | 1 | 0 |
| 13 Tens are | | 1 | 3 | 0 | 1 | 1 | 0 |
| 6 Units are | | | | 6 | 6 | 0 | 0 |
| | | | | | | | |
| | 2 | 3 | 6 | | 20 | 2 | 0 |

The sums should be proved by Reduction whenever this is possible. Working by an independent method is always the most satisfactory mode of proof.

VIII. Practice is "a convenient method of multiplication" (*DeMorgan*). In teaching this rule also, the all-important matter is that the pupils shall understand the reasons for each step in the process and value of each line of figures which they obtain.

Illustrative Examples:—

1, 576 at 3d. each.

| | |
|---------------------|---|
| $\frac{g}{576}$ | = value of 576 at 1 farthing each, in <i>farthings</i> |
| $\frac{3}{ }$ | |
| 4) $\frac{1728}{ }$ | = value of 576 at three farthings each, in <i>farthings</i> |
| 12) $\frac{432}{ }$ | = <i>pence</i> |
| 2,0) $\frac{36}{ }$ | = <i>shillings</i> |

£1, 16s. " " " " *of ordinary money*

We shall obtain the value at £2 8 9½, if we add the separate values at £2, 8 shillings, 6 pence, 3 pence, and 1 halfpenny; or if we add the values at £2, 6s. 8d., 1s. 8d., 5d., ½d., or if we break up the total sum £2 8 9½ into any other convenient amounts, and after finding the value of 649½ at each of these amounts, we add them together.

£649 value of 649 articles at £1 0 0 each

| | | | | | | |
|------------------------------|--------------------|------|----------------------------|----------------|----------------------------|------------------|
| 8s. is $\frac{1}{5}$ of £2 | 8s. $\frac{1}{5}$ | 1298 | value of 649 articles at 2 | 0 | 0 | each |
| 6d. is $\frac{1}{10}$ of 8s. | 6d. $\frac{1}{10}$ | 259 | 12 | 0 | 8 | 0 |
| 3d. is $\frac{1}{2}$ of 6d. | 3d. $\frac{1}{2}$ | 16 | 4 | 6 | 6 | „ |
| 1d. is $\frac{1}{8}$ of 3d. | 1d. $\frac{1}{8}$ | 8 | 2 | 3 | 3 | „ |
| | | I | 7 | $0\frac{1}{2}$ | $\frac{1}{2}$ | „ |
| | | 1583 | 5 | $9\frac{1}{2}$ | value of 649 articles at 2 | 8 |
| | | | I | 4 | $4\frac{1}{4}$ | $9\frac{1}{2}$ „ |
| ANS. | | 1584 | 10 | $2\frac{1}{4}$ | value of 649 articles at 2 | 8 |
| | | | | | | $9\frac{1}{2}$ „ |

The same sum should now be worked by using other aliquot parts, and both examples should appear on the board together. The teacher must see that in the early cases the parts are exactly contained in the dividend, or the uncalculated remainders will probably cause the answer in one case to be slightly different from that obtained in the other. If Addition of Vulgar Fractions has been previously taught, this difficulty will be obviated.

IX. Ratio, Proportion, and Rule of Three. Ratio.
 (a) The ratio between two numbers shows *how many times* the one is greater or less than the other; or *how many times* the one contains the other or is contained by it. Thus the ratio between 1 and 5 is the same as that between 3 and 15, or between 7 and 35, etc.

(b) *Conventional modes of expressing Ratio.* Two are in common use. The ratio between 2 and 3 is expressed thus:—

$$\frac{2}{3} \quad \text{or} \quad 2 : 3$$

(c) *Ratio can only exist between quantities of the same denomination.* We can establish a ratio between 6 horses and 12 horses, or between 4 men and 13 men, &c.; but we cannot speak of the ratio between 6 horses and 12 cows, because the one cannot be contained in the other. Nor can we establish a ratio between 7 pence and 5 shillings, or between 2 cwt. and 3 tons as such; but we may speak of the ratio between 7 pence and 60 pence, or that of between 2 cwt. and 60 cwt.

(d) Define “Antecedent” and “Consequent.” Question the boys to see if you have been understood.

Proportion. (a) *Proportion is the equality of ratios.*—2 is one-half of 4, 3 is one-half of 6; $\frac{2}{3} = \frac{4}{6}$; the ratio between 2 and 4, is the same as that between 3 and 6;—the four numbers are in “proportion.”

$$2 : 4 :: 3 : 6$$

(b) When four numbers are in proportion, *the product of the means is equal to the product of the extremes.*

Define the terms “means” and “extremes,” and illustrate the truth of the dictum by an example.

$$2 : 4 :: 3 : 6 \quad (\text{i.e., } \frac{2}{4} = \frac{3}{6})$$

$$2 : 3 :: 4 : 6 \quad (\text{i.e., } \frac{2}{3} = \frac{4}{6})$$

$$4 : 2 :: 6 : 3 \quad (\text{i.e., } \frac{4}{2} = \frac{6}{3})$$

$$4 : 6 :: 2 : 3 \quad (\text{i.e., } \frac{4}{6} = \frac{2}{3})$$

$$; 4 :: 3 : 2 \quad (\text{i.e., } \frac{4}{3} = \frac{2}{2})$$

$$5 : 3 :: 4 : 2 \quad (\text{i.e., } \frac{5}{3} = \frac{4}{2})$$

$$3 : 2 :: 6 : 4 \quad (\text{i.e., } \frac{3}{2} = \frac{6}{4})$$

$$3 : 6 :: 2 : 4 \quad (\text{i.e., } \frac{3}{6} = \frac{2}{4})$$

In every one of these cases, the product of the means and of the extremes will be 12.

(c) Therefore it is possible to find any one term in a proportion, if the other three be given.

(Draw the chalk through any of the terms in a complete proportion, and set the boys to find it, by using the remaining three numbers. Repeat this process until they can do so readily. Pay special attention to finding the fourth term, when the first, second, and third terms are given.)

(d) If the antecedent in one of the ratios in a proportion be greater (or less) than its consequent, the antecedent in the second ratio will also be greater (or less) than its consequent.

Show this after writing out a large number of complete proportions.
(In this connection, however, read for yourself *Def. 5, Euclid, B. 5.*)

Rule of Three. (a) This is a special case of proportion, in which only three terms are given, and we are required to find the fourth. In the terms which are given, we have the antecedent and consequent of one ratio, and the antecedent of the second ratio.

(b) First determine which of the terms is this last antecedent. (Apply (c) under ratio). Set it down and put x for its consequent.

(c) We have now two terms left, and we have to determine which is to be the antecedent and which the consequent in the ratio of which these terms are components. (Apply (d) under Proportion). Consider whether x will be greater or less than its antecedent; if greater, put the greater of the terms in the other ratio for the consequent; if less, the lesser. Complete the proportion, leaving x for the fourth term.

(d) See whether both the terms of the ratio which is known, are of the same denomination; if not, reduce them to it. (See (e) under ratio.)

(e) See whether the antecedent of the other ratio is in a convenient denomination or not; if not, reduce it.

(f) Find the fourth term and bring it to a convenient denomination. (See (c) under Proportion.)

The ordinary rule for "Rule of Three" may be formulated and committed to memory, after it has been illustrated and educed by means of several examples.

The young teacher ought to be able to construct such examples easily, after he has mastered the reasons for the arrangement here given. He is advised to pay special attention to this important rule.

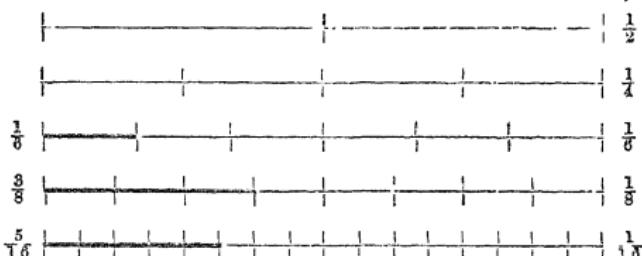
N.B. *Simple and Compound Interest, Stocks, Discount, Partnership,* and other similar rules, should be taught as cases of the "Rule of Three," and the reasons for any special method should be educed.

X. Vulgar Fractions. There is no reason why the easier cases of fractions should not be taken immediately after Simple Division. All the processes are simple, and most of them are capable of easy explanation. An indication of the use which may be made of the Multiplication Table has already been given (see Simple Division).

(a) *Preliminary Mental Exercises* of the kind mentioned under Division should be given, as well as others in which concrete numbers are used. Useful questions may be easily made which have reference to money.

(b) *Explanation of terms*, “*Numerator*,” “*Denominator*,” “*Fraction*,” &c. Show by lines and by writing the fractions on the black board, the value of $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, &c.

each part.



(c) *Common Denominator*. 1. With lines show that $\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8} = \dots$ &c. 2. Require the boys to express a given fraction in several different ways. 3. Require them to express two or more fractions with a *given* denominator common to them all. Easy examples at first. 4. Lead up to the rule, state, illustrate, and give exercises.

(d) *Addition and Subtraction*. 1. We cannot add or subtract integral quantities unless they are of the same kind; e.g., 6 horses + 4 horses + 8 horses are 18 horses; but 6 shillings + 4 halfpence + eight farthings are not 18 shillings, or 18 halfpence, or 18 farthings.

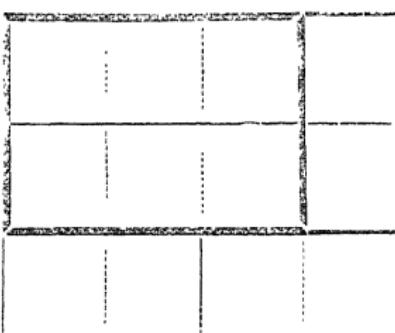
2. So it is necessary to reduce fractions to the same name, “*to a common denominator*” before we can add or subtract them.

3 Apply (c) above, work illustrative examples, and give exercises.

(e) *Multiplication*.* In multiplication of Vulgar Fractions we have to find a fraction of a fraction. Use simple diagrams to educe the rule.

e.g., Find the value of $\frac{2}{3}$ of $\frac{3}{4}$.

Draw a rectangle whose sides are 4 and 3. Divide it into thirds by horizontal lines, and let boys get a clear idea as to what is meant by $\frac{2}{3}$ of the whole rectangle. Now divide the horizontal line into fourths, and draw vertical lines through the divisions.



* We assume that boys know how to multiply an integer by a fraction (see Simple Division).

We thus get the whole rectangle divided into equal twelfths, 6 of which are contained in the part marked off by the lines which show $\frac{2}{3}$ of $\frac{3}{4}$ of the whole rectangle, i.e., $\frac{2}{3} \times \frac{3}{4} = \frac{6}{12} = \frac{1}{2}$.

Other examples, in which other fractions are involved, should be taken, and the rule educed and stated.

Exercises should then be given.

(f) *Division.* 1. In dealing with whole numbers, the quotient is always less than the dividend; in fractions this is not the case. Thoughtful boys often have a considerable difficulty here. They should be helped thus:—

Multiply 12 successively by 8, 4, 2, 1, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, and set down the answers.

Divide 32 successively by 16, 8, 4, 2, 1, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, &c., and set down the answers.

Bring under notice again that Division is a shortened process of Subtraction, and show that *the smaller the subtrahend, the greater the number of times it can be subtracted from any given minuend.*

2. *Divide a fraction by an integer,* and use a diagram similar to that employed in multiplication to explain the process; e.g., if $\frac{3}{4}$ be divided by 4, we obtain the same result as if we multiply $\frac{3}{4}$ by $\frac{1}{4}$, the quotient is $\frac{3}{16}$. This can be easily shown by a diagram. Give other examples.

3. *Divide a fraction by a fraction;* e.g., $\frac{4}{5} \div \frac{2}{7}$. From (2), if $\frac{4}{5}$ be divided by 5, the quotient is $\frac{4}{25}$.

But $\frac{2}{7}$ is one-seventh of 5.

\therefore Any number contains $\frac{2}{7}$, seven times more than it contains 5, (or $\frac{2}{7}$ can be subtracted from any number, 7 times more than 5 can be subtracted from the same number).

$\therefore \frac{2}{7}$ is contained $\frac{7 \times 5}{25}$ in $\frac{4}{5}$, or $\frac{4}{5} \div \frac{2}{7} = \frac{14}{25}$.

Apply similar reasoning to other examples, educe the rule, formulate it, and give exercises upon it.

XI. Decimal Fractions should be taught after Vulgar Fractions. The decimal should be expressed in its equivalent (vulgar) fractional form, and the processes (of Addition, etc.) should be first gone through as in Vulgar Fractions.

After this, the special method by which decimal operations are performed should be shown. It will be easy for the teacher to explain the reasons for these operations if boys can work Vulgar Fractions, and if they understand the meaning of a decimal expression. This last point is that to which the teacher must first attend (e.g., $.6 = \frac{6}{10}$; $.013 = \frac{13}{1000}$, etc.)

Examples. 1. Bring $\frac{5}{8}$ to a decimal form.

This means, find a fraction which shall be equivalent to $\frac{5}{8}$, but whose denominator shall be a power of 10.

But $\frac{5}{8} = \frac{50}{80} = \frac{500}{800} = \frac{5000}{8000} = \frac{50000}{80000}$, &c. (See *e* Vulgar Fractions), and our problem is to express this value in a fractional form, but with the denominator 10, or 100, or 1000, or some other power of 10. It is evident that this may be done in this case if the numerator and denominator contain 8 an exact number of times, by dividing both numerator and denominator by 8.

$\frac{50000}{80000}$ is the lowest form that will suit our purpose, and this is equal to $\frac{625}{1000}$ or to .625.

Other examples should be given, the results left on the black board, and the special rules for reducing a vulgar fraction to its equivalent decimal form should be educed. Exercises should follow.

2. Add together 3.5, .62, and .008.

$$\left. \begin{array}{r} 3.5 = 3\frac{5}{10} \\ .62 = \frac{62}{100} \\ .008 = \frac{8}{1000} \end{array} \right\} \quad \begin{array}{l} \text{The total is } (3 + \frac{5}{10} + \frac{62}{100} + \frac{8}{1000}) \\ \text{or } (3 + \frac{500}{1000} + \frac{620}{1000} + \frac{8}{1000}) \\ \text{or } (3 + \frac{562}{1000}) \text{ or } (3 + 1 + \frac{562}{1000}) \\ \text{or } 4\frac{562}{1000} \text{ or } 4.562 \end{array}$$

Now show the ordinary method, and show that in it we really calculate with the numerators of the above fractions, and allow the position of the figures to indicate their fractional value. (Connect this with advanced Lessons on Notation.)

3. Multiply 4.7 by 9.12;

i.e., multiply $4\frac{7}{10}$ by

$$\text{or } \frac{47}{10} \times \frac{912}{100}$$

$$\text{this is } \frac{47 \times 912}{10 \times 100}$$

$$\text{or } \frac{42864}{1000}$$

$$\text{or } 42\frac{864}{1000}$$

$$\text{or } 42.864$$

Now show the ordinary method, and connect it with the above, as in former cases.

By slight modifications of the plans here given, it is possible to teach all the ordinary operations in decimals.

N.B.—Use Decimals in working *Compound Interest*, and in all other cases where their employment will shorten or simplify the work. The *exact answer* to the following sum is found with ease thus:—

SCHOOL METHOD.

"Find the amount of £250 14s. 6d., for 4 years, at 3%, C. I."

$$\begin{array}{r} 250. \quad 725 \\ - 7. \quad 52175 \\ \hline \end{array}$$

$$\begin{array}{r} 258. \quad 24675 \\ - 7. \quad 7474025 \\ \hline \end{array}$$

$$\begin{array}{r} 265. \quad 9941525 \\ - 7. \quad 979824575 \\ \hline \end{array}$$

$$\begin{array}{r} 273. \quad 973977075 \\ - 8. \quad 21921931225 \\ \hline \end{array}$$

282. 19319638725

or £282 3s. 10½d. .46853176

Teach boys the rule for at once reducing ordinary money to a decimal form, true to three places, and for bringing decimal money to its equivalent ordinary value.

GEOGRAPHY.

Reasons for teaching Geography. 1. *A fair amount of geographical knowledge is assumed in newspapers and in common literature.*

The parts of the world are now brought into close connection. Newspapers are largely cosmopolitan, and we have the means of learning what is taking place throughout the civilized world soon after the events have occurred. The discoveries which are being made in regions hitherto unknown, or but partially explored, excite a natural and laudable curiosity. The labours of missionaries, the spread of emigration, and the facilities which are offered by rapid steam communication, have brought the remote parts of the globe closer together. On all these accounts a knowledge of Geography is desirable.

2. There is an intrinsic charm in the subject itself for most minds.

Lessons on Geography are generally popular in school. The maps and diagrams which are used, the oral character of much of the teaching, the interesting knowledge which is given directly or gleaned incidentally during the lesson, and the comparative ease with which new facts are acquired and remembered, render Geography a favourite study with boys, and an agreeable change after other school-work.

3. A knowledge of Geography is an aid to general acquirement.

This help is usually indirect, and is perhaps more apparent in History than in other school subjects. But we must remember that every development of the mind in one direction, enlarges its capacity as a whole. Locke observes that the knowledge of things and of places which is obtained in the Geography lessons, is an aid to language. We have called attention to this before, in speaking on "Oral Teaching."

4. The Education Department now requires that reasonable attention shall be paid to Geography in elementary schools.

If the requirements of the New Code are to be fairly met, this subject must be taught systematically throughout the school.

Aims of the teacher of Geography. This subject, as treated in school, has two branches, "General" Geography, and "Physical" Geography.

1. The General Geography lesson of the elementary school deals essentially with facts. The teacher tries to give a knowledge of the topography of a country or a district, and to combine with it as many of the facts and principles of its Physical Geography, and of the details of its Political Geography as he can.

He has to teach these things in the first instance to children who know nothing about them, so that his teaching must in the main be *instructive*. His lessons will sometimes have almost exclusive reference to Physical Geography, and sometimes to Political Geography, but he may at times combine both. Some acquaintance with Physical Geography is necessary to the proper comprehension of Political Geography. In all his lessons he will use a map, and thus endeavour to give correct notions of topography. As his boys pass up the school, the early lessons are repeated in another form and amplified, so that the knowledge of the boys becomes fuller and more accurate. Such a knowledge of the general facts of Geography is of more practical utility in after life, than an acquaintance with the principles of Physical Geography, if these be gained at the expense of the former.

Physical Geography is really a separate science, admitting to a large extent of scientific treatment in school.

The most important *facts* of this science, as it affects the world as a whole, and separate countries in particular, are given in the ordinary textbooks on Geography, and the teacher who desires his pupils to learn these, should use the ordinary means of *instruction* to attain his end.

But scientific knowledge means an acquaintance with *principles and reasons* as well as with *facts*, and the teacher of a science must teach the facts and show their connection with the principles. He may do this in one of two ways; (1) he may state the principles first and show how they include the facts, or (2) he may begin with details, and by wise selection, arrangement, and experiment, show how general laws have been arrived at inductively from the observation of numerous particulars; in other words, he may ascend from facts to principles. This latter is the better method, *provided the teacher can use it*. Any science taught in this way may be made to furnish a valuable training in scientific modes of thought.

If Physical Geography be taught as a science in school, it should be illustrated as far as possible by physical experiments, and the observation

and experience of the pupils should be appealed to continually. No science should be "crammed" into the learners.*

An ordinary Geography Lesson. In this the teacher *selects* his facts, *arranges* them in proper order, *associates* them with one another and with interesting illustrations, and *repeats* his instructions until he is satisfied that his pupils have learned what he wished to teach.

Dr. Cornwell's "School Geography" affords an admirable specimen of the way in which isolated facts may be collected, arranged, and to a certain extent illustrated, and there are many smaller books which are equally good as far as they go. Such books, however, ought to correspond to "*Teaching Notes*" in an oral lesson; *they give the facts and their arrangement*, but the method by which these facts are to be taught and illustrated rests with the teacher himself.

The commonest mistake which is made is in teaching these isolated facts by rote, and taking a knowledge of these for a knowledge of Geography.

A teacher begins with the *coast* of a country, points out and names the *openings* on the East, South, West, and North, writes them on the black board, and requires his boys to repeat them simultaneously until they are committed to memory. He then goes on to the *mountains, and lakes, and rivers*, and so on in turn, until he has taught all the facts he desires, and there his lesson ends. The boys have learned something, but there has been no illustration, and no association of interesting matter with the bare details; it is not likely, therefore, that such a lesson will arouse the interest of the scholars as it is given, or that the facts with which they have been crammed, will remain long in their minds after the lesson is over.

How then can we teach these details—for we must teach them—so that they may be learned with pleasure and be remembered also?

Let us suppose that the teacher is about to give a lesson on the physical geography of "Surrey." One proceeds on the plan we have just reprehended, taking the "*Boundaries*," "*Hills*," "*Rivers*," and so on to the end. Another not only *learns all these details, and arranges them in his own mind* before he comes into his class, *but thinks anxiously how*

* It is desirable that the teacher should have some knowledge of *Experimental Physics*, and of *Physical Geology*, as well as of the ordinary *Physical Geography*, and so much *Elementary Astronomy* as is contained in the ordinary text-books.

he may best teach them, and what interest he can throw into his lesson by arranging it in a special way, and what new matter he can connect with the facts, so as to fix both the facts and the new matter in connection on the minds of his pupils. Perhaps, after drawing an outline map in chalk upon the black board, to be filled up as he goes on, he thinks that he will take the *railways* that pass through the country as the basis of his lesson, and notice the character of the country through which these pass. Or he may proceed thus:—He assumes that he and his class are standing on the *Hog's Back*, the long chalk-down between *Guildford* and *Farnham*. He notices that the hill is composed of chalk and is covered with short grass;—that a similar range of chalk hills is continued to the East quite through the county;—that these and the connected hills in Kent and Hants form the *N. Downs*. He notices that to the south there is a lofty set of ridges composed of sand, and containing sandstone and ironstone; that in this ridge are the highest hills in Surrey, *Hindhead*, and *Leith Hill*;—that the principal peaks which can be seen are *Crooksbury Hill*, with its covering of firs, *St. Martha's Hill*, crowned with its church, and *Box-hill*, with its steep and box-covered sides, overlooking the town of *Dorking*, and the *Weald* and the river *Mole*;—that far away to the N.E. is *Richmond Hill*, and still further away and more to the East, the hills of Kent, on which we may see the Crystal Palace. He then calls attention to the extensive *plain* to the North, noticing that the soil is poor and covered with heath;—that *Aldershot Camp* lies away to the N.W., and that this heath land extends towards *Weybridge* and *Chertsey*. Then he notices the plain between the two ranges of hills, which is partly fertile, but a great part heath. The winding *river* near at hand is the *Wey*, which has worn itself a passage through the chalk at *Guildford*, whilst the *Mole* has cut a passage even more abrupt through the Downs near *Dorking*. Both these rivers run to the *Thames*, and turn the waterwheels of numerous mills as they flow. In this way he goes on until he has completed this part of his lesson. He now recapitulates, not exactly in the order in which he introduced his facts, but more in accordance with the plan on which the other teacher gave the lesson. He obtains the “*Boundaries*,” and “*Hills*,” and “*Rivers*,” and the rest, and writes them on the black board. But the result will be very different in the two cases, though both have covered nearly the same ground; one teacher has given a lesson on names, the other a lesson on Geography.

If boys have text-books of their own, (and this should be required wherever it is practicable) a lesson should be set to be prepared at home; the teacher should question the pupils to see whether the lesson has been learned, and should then supplement the information which has been gathered from the

text-book by extra information which he has obtained from other sources.

This relieves the teacher from the necessity of teaching those facts which the boys can learn for themselves, and sets him free to teach others. (The practical teacher knows, however, that he must not *assume* that his pupils will prepare their lesson at home; he must always *see that they have* learned it before he goes on to his other work). His style in the Geography lesson should be graphic and pictorial as far as his own powers, and the nature of the subject, and the capabilities of the learners will allow. (See end of this paper.)

Hints on teaching Geography.

I. To a Junior Class. Standards I. and II.

[On all these consult the scheme contained in the "New Code."]

The *object here is to familiarize the children with maps*, and to lead them to understand what the various markings upon them really mean.

Diagrams and models should be used as an introduction to the ordinary map. The *model* of an island should be shown, then a *perspective* representation of it, and then a *plan* of it (*i.e.*, a *map*). If the same island can be pointed out on an ordinary map, so much the better. (Illustrations of this kind can be obtained.) Other islands should then be shown on the map, and their common character pointed out.

The *definition* of the term (*island*) should then be educed, put into a compact form, and committed to memory.

In this way all the ordinary terms in Geography may be taught quickly and well.

A useful illustration at this stage is a *plan of the school*, showing its desks, &c., in position. The teacher may readily draw one on the black board. A map of the *school premises*, or of the *neighbourhood of the school* will also be useful. The compass points may be taught and illustrated by these.

If the Map of the World or of England be used, *it will be possible to teach many other matters incidentally*.

II. To an intermediate Class. Standards III. and IV.

The object now is to teach with some detail the Geography of

England, and in less detail, that of *the British Islands, the Colonies*, and the *World*.

It will be desirable to *vary the map* which is used, sometimes the *World*, at others the *British Islands*, or *Europe*, and occasionally the *Map of the County*.

The teacher should *arrange his course of lessons and prepare each of them* carefully before he comes into his class. This is the only way in which he can get through the course in a proper way in reasonable time.

The *general plan* would be that indicated in the former paragraph, "An ordinary Geography Lesson."

Draw maps on the black board, and fill them in as required whilst the lesson is proceeding. Also *set the boys to draw maps* upon their slates or on paper. This is very important in this and the higher stage. After a time boys should be able to draw a fair map of their county and of *England* from memory.

III. To an advanced Class. Standards V. and VI. The pupils will now be prepared to receive *lessons on the separate countries* of Europe and of the *World*. *Physical Geography* should be taken up, and the *lessons of the earlier stage* should be *repeated and amplified*.

A good Map of the World, showing the *British Possessions* clearly, and also the *Ocean Currents, Trade Routes, &c.*, will be very useful. It is advisable to have *two maps* before the class at the same time, one of the *World in Hemispheres*, and the other of the *World on Mercator's projection*.

The lessons will generally be of an "*advanced ordinary*" character, and will require more than ordinary care and thought in their preparation.

But the Geography lessons ought to go much further at times. Such subjects as the following should be noticed, sometimes as illustrations, sometimes in special lessons:

The influence of the Geographical features of a country on the welfare and character of its inhabitants.—(*Illustrate by Great Britain, Tartary, Hindostan, &c.*)

In early times mountainous countries were inhabited by numer-

ous independent states, (*Ill. Greece, Italy, &c.*) whilst extensive plains have been the seats of great empires (*Ill. Egypt, Assyria,*)

Islands and mountainous districts have been the home of freedom (*Ill. Britain, Switzerland*).

"Two voices are there, one is of the sea,
One of the mountains, each a mighty voice :
In both from age to age thou didst rejoice,
They were thy chosen music, Liberty."

Wordsworth.

The sea and the mountains form a bulwark against invasion, and a means of preserving a distinct national character.

The *influence of an extensive sea coast and a favorable climate upon commerce.*

Ocean currents as affecting *climate and trade.*

The judicious teacher will always be on the look out for collecting materials to illustrate his lessons. The information is valuable, and it relieves the tedium of the "book Geography" when it is introduced into the lesson. There is a special propriety in bringing such considerations under the notice of intelligent boys, as it leads them to see that which is not evident to superficial observers, and encourages them to look deeper than ordinary into ordinary matters.

Those teachers who have access to a good library should read Lyell's "*Principles of Geology,*" and De la Beche's "*Geological Observer.*" They will obtain much information on Physical Geography from these and similar works. Ramsay's "*Physical Geology and Geography of Great Britain*" is also a work worthy of special recommendation.

Further general Hints on teaching Geography.

1. **Maps and Diagrams** are of the first importance. They appeal to the eye, so that the visual memory becomes an aid to acquirement.

Maps for ordinary class use should *not be crowded* with names, or they become indistinct. *Blank maps* are best for recapitulation, and it would be well for every school to have a proper supply of these.

Maps in Relief may be of service in a younger class, but as a rule the elevations are not sufficiently pronounced to make this kind of map

available for class teaching. If the map be large, it is cumbrous and expensive. Encourage the boys to have *Atlases* of their own, on which they may follow the lesson at the teacher's direction, whilst he uses the school map.

Use the Map of the World at times in all the classes. Boys are likely to form wrong ideas as to relative size unless this be done.

The teacher should habitually *draw sketch maps on the black board*. If these are filled in as the lesson proceeds, they become the best of all maps for teaching purposes. The boys may copy them on their slates if time allow.

The boys should be encouraged to draw maps. They may be made to take pride in these productions, and map-drawing is a valuable means of teaching Geography. If there be plenty of room, *the map may sometimes be laid on the floor* (care being taken to keep it clean and uninjured). It should be placed properly with reference to the cardinal points; then, if the boys stand around it, they obtain clearer notions of relative position.

2. A *Globe* is a useful piece of apparatus in the Geography lesson. It enables the teacher to give his boys a better idea of the relative sizes and positions of the parts of the world than can be gained from maps. But it is almost impossible to show details to a class from a globe. If used, it should be with Maps of the World at hand to refer to.

A slate globe is of service for marking the outlines of countries, &c., upon, in teaching a small class. The lines of latitude and longitude should be permanently marked upon it.

A wooden ball, perforated to admit an axis (of bent iron fixed to a stand), and on which the Equator, and the tropical and polar circles are painted, is also very useful. If one-half of this ball be made black, it may serve as an illustration in lessons on the Seasons, on Day and Night, and on the Phases of the Moon. Many interesting lessons can be given, and *problems* worked with a globe properly fitted with horizon and meridian.

3. A *Mariner's Compass*, and a *Quadrant* or a *Sextant* are also of occasional service.

The ingenious teacher will be able to construct a rough model of the Quadrant which will serve his purpose, and a pocket compass may be bought at a very low price.

4. In some schools a *white line is drawn across the floor* in the meridian plane from N. to S.

5. *Draw your illustrations from objects which are familiar to the boys.* Compare the heights of hills for example, with that of a hill near the school.

The teacher ought to make himself well acquainted with the geography of the neighbourhood.

6. It is well to fill all available space on the school walls with maps and other pictorial illustrations.

Much information is picked up from this source by observant pupils.

7. *Lessons on particular "Rivers," afford a good means of teaching Geography.*

A lesson on the "Yorkshire Ouse" would enable the teacher to bring in all the necessary local geography. The same may be said about "Railways," and "Seas;" the "Basin of the Baltic Sea," for example, would be a good lesson for an advanced class, and the teacher should give lessons of this kind, which demand some constructive effort on his own part, and tend to generalize the knowledge which his pupils have acquired from studying the geography of several separate countries or districts.

8. *Try to connect History with Geography when you can.* Appeal to the boys' knowledge of Geography when it is available in their ordinary reading lessons. Endeavour always to use a graphic descriptive style in the Geography lesson; it is not very difficult to acquire this, and it will always prevent the lessons from becoming "dry."

9. The following remarks are quoted by permission from Mr Fearon's recent work on "School Inspection." "*Lessons in Political Geography ought to be connected with History, and illustrated as much as possible by anecdote.* The great danger of this branch of Geography is its tendency to degenerate into mere lifeless, thoughtless cram, or a mere repertory and catechism of unmeaning names. It is, for example, very difficult to make English children take an intelligent interest in the political geography of Ireland. But let the teacher who is to teach the geography of Ireland, read for this purpose such works as the account of the Irish campaign in the second volume of *Oliver Cromwell's Letters and Speeches* by Mr. Carlyle. Let him master

the spirit and main outlines of the story, and then let him teach the political geography of Ireland by way of illustration of the story which he tells the children. So with the geography of any other country. India should be taught by reference to such stirring events as the life of Lord Clive and the Sepoy mutiny; Spain by reference to the Peninsular War; Australia by unfolding the story of its gradual settlement and colonization; and all parts of England by reference to English history. Anything that will help the teacher to avoid mere statistics in the geography lessons, to disentangle the important from the unimportant details, and to throw a colour of human interest over the whole work, should be caught at and utilized."

10. *Extract from the "Minutes of Council" for 1853.* "The teacher who makes it his aim to inform his pupils in the broad elements of physical, commercial, and moral geography, who looks upon the geography of names and of locality as only of value in subordination to these, will confer a service upon them whether as regards their education, their information, and the development of their human sympathies, infinitely beyond what he would do were he to store their minds with the exact heights in feet of all the mountains, and the lengths in miles of all the rivers between the North Pole and the South, or the exact area of all the countries, and the names of all the towns between Greenwich and Greenwich again."

HISTORY.

Reasons for teaching History. History has excellencies of its own which recommend it as a subject for school work.

1. As in Geography, a fair amount of knowledge is assumed in ordinary literature, so that some acquaintance with History is necessary for the intelligent reading of newspapers and books.

2. There is in it the *charm of story*, which exercises considerable influence on all minds, and renders a well-managed history lesson a pleasant relaxation after severer study.

A teacher who possesses good graphic power, can construct word-pictures of the condition of the country at former periods, and of the stirring events which have taken place from time to time.

3. It affords opportunities for *tracing the sequence of cause and effect*, for following the operations of a cause through a series of years.

Illustrations of this fact increase in number according as the teacher is thoughtful and well-read. We would seriously advise young teachers to look for this as they read, and to make it a very prominent point in their history lessons. Every event has a cause ; search it out if you can.

4. *Frequent appeals can be made to high principles, and to the nobler instincts of the pupils*, so that the history lesson may become a great means of moral training.

The right-minded teacher has in this lesson the opportunity of inculcating a righteous indignation at wrong doing, a detestation of meanness, and a love of what is noble in intention and in act. He may show that the truly great man is animated by an earnest purpose, and that he is willing to make any sacrifices, and to endure any amount of suffering for what he honestly believes to be right. He can point out that something more than intention is necessary to a noble career, that action is wanted, "that no man (and no nation) ever becomes truly great

in his sleep."—*Carlyle*. He can teach that wrong doing on the part of an individual or of a people is well nigh certain to produce evil results in the end, that "righteousness exalteth a nation, but sin is a reproach to any people." In fact, history is full of teachings of this character for him who can find them.

5. History is now *one of the "specific subjects"* for class examination under the New Code.*

The aim of the teacher of History should be to give his pupils a broad general acquaintance with the main facts of our country's story, and with the order in which they occurred, together with as full a knowledge of details as possible.

It will be noted that the present New Code does not provide for class examination in history, until children have reached the Fourth Standard. But it will be well in the interests of the scholars, to begin the subject earlier, say in Standard III. The chief epochs in our history should be selected, and be made the subjects of separate lessons, in which the aim should be to give correct general notions, rather than to teach multitudinous isolated facts; we should proceed here "from generals to particulars." The following list of subjects for lessons at this stage is suggested :—

The Ancient Britons.

The Romans in Britain.

The Anglo-Saxons and the Heptarchy.

The Danes (connect especially with Alfred the Great and with Canute).

The Norman Conquest and its consequences.

Magna Charta.

The first Parliament.

The Wars of the Roses.

The Reformation.

The Civil Wars of Charles I.

The Restoration.

The Revolution of 1688.

The reign of George III. (Washington, Napoleon, Nelson, Wellington).

These lessons should be repeated as necessity requires and occasion offers. After going over them two or three times, at intervals of three or four months, the boys would be ready to commence a severer course.

An ordinary History Lesson. (Standards IV., V., VI.)

i. In this subject, as in Geography, *each boy should have a text book*, and should be required to prepare his lesson at home.

* It is not necessary to mention again the utility noted under Geography (3).

2. *The teacher must also make suitable preparation*, by carefully mastering the detailed history of the period, not only as far as he expects his scholars to go, but much further, so that he may be able to give such additional information as is desirable. He has also to consider how he may teach his subject, and must make his arrangements accordingly. The boys should have learned the details for themselves, the teacher must gather these up into a whole, and connect them together properly.

3. In the class the teacher will first ascertain by rapid and well distributed questions, whether the lesson has been properly prepared or no, and will notice those who specially distinguish themselves, as well as those who cannot answer. He will reward those who deserve it with an "extra" mark, and will keep the lazy boys to learn their lesson after school.

4. When he has satisfied himself as to the pupils' knowledge of the lesson which was set, he will teach those other points which he has specially prepared, and will endeavour, by proper selection, careful arrangement, suitable illustration, and due repetition, to amplify, methodize, and fix the knowledge which his pupils have acquired. In this he will bear in mind the considerations which have been mentioned under 3 and 4 of the "Reasons for teaching History;" he will do all that he can to connect facts and reasons, and to inculcate high principles, as well as to teach facts and arrive at generalizations.

5. He will require his boys to write an abstract of the whole lesson, or to answer in writing questions upon various parts of it. This is a suitable exercise for next day's home lesson. The scheme of the lesson which has appeared on the black board ought to be used by the scholars in drawing up their abstract.

"Teaching Notes" of a Lesson on the reign of Henry III. (For a first class; 4th, 5th, and 6th Standards.)

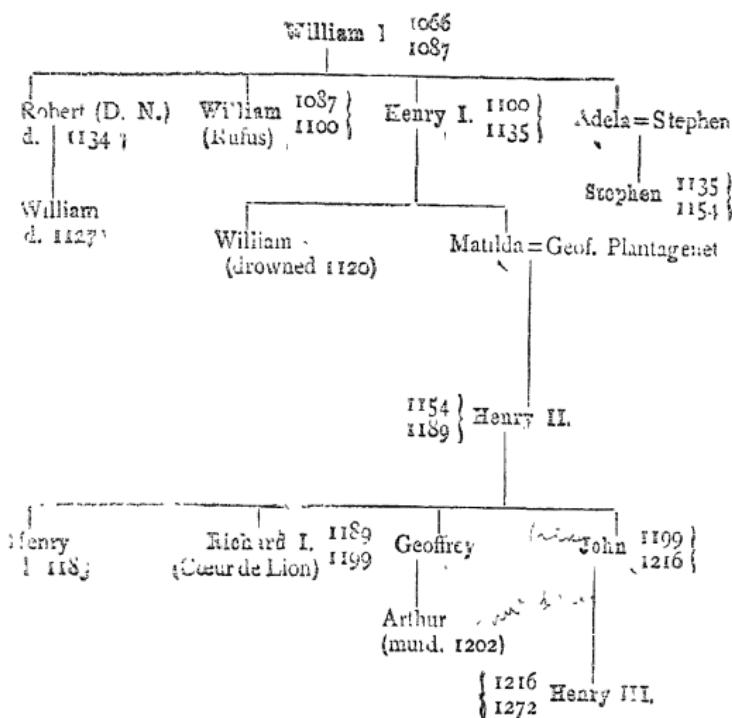
i. *Condition of the Country and Regency of Pembroke.*

1215-6 Louis, the Dauphin (afterwards L. IX.—"St. Louis"), at the head of a party of barons.

1217 Defeat of L. at "Fair of Lincoln."

1219 Death of Pembroke.

2. *Hub. de Burgh and Peter des Roches*—rivals.
3. *Confirmation of Magna Charta. 1225.*
Original now on view at Brit. Mus. Repeated confirmations in old times. M. C. appealed to as a standard.
4. *Abortive invasion of France.*
1242 Defeat of Henry at Taillebourg.
5. " *Mad Parliament.*" 1258.
Bad government of Henry.
Barons very powerful, king only "*primus inter pares*" (first among his equals).
S. de Montfort at head of confederates.
" *Provisions of Oxford.*"—Freeholders to choose four knights to state their grievances. Limitations on king's authority.
6. *Barons' War. 1264.*
Henry tries to recover his power by force.
De Montfort and barons resort to arms.
1264 Battle of Lewes—defeat and capture of Henry—"Mise of Lewes"—Prince Edward a hostage.
7. *First Parliament. 1265.*
De Montfort, partly through fear of his fellow barons, partly perhaps through good will for the people, calls representatives from cities and boroughs.
Thus, weakness of Henry leads to introduction of parliamentary representation.
8. *Battle of Evesham. 1265.*
Prince Edward escapes and gathers army.
1265. De Montfort slain.
9. *Edward goes to Crusades. 1270.*
Takes with him turbulent barons, and thus relieves the country whilst he attaches them to himself by common danger.
10. *Death of Henry, 1272. Character.*
Weak rather than positively wicked. Vacillating. Promising readily, not keeping promise. Weak government always productive of evil.
11. *Turbulent Nobles.*
People rising in importance.
First parliament a great step.



For a lower Class (4th Standard), which has gone through the historical course for Standard III., as recommended before, it will be sufficient to take:—

1. Regency of Pembroke, and defeat of Louis.
2. Bad government of Henry causes Barons to combine,—“Provisions of Oxford.”
3. Barons’ war.—Lewes, 1264. Evesham, 1265.
4. First Parliament, 1265.
5. Prince Edward a crusader.
6. Character of Henry, and condition of the people.

Chronology has been styled “the right eye of History.” “Dates are to the study of history what the multiplication table is to arithmetic. They are the essential frame-work on which to build up and keep sustained all the scholar’s historical learning. And dates, like the multiplication table, should be acquired in childhood, while the memory is still vigorous and retentive.” —

Mr. Fearon.

Unless this department of History receive considerable attention, the most hopeless confusion is likely to ensue. Even from the first, the pupils should be required to pay attention to the chief dates, and this exercise should become more and more detailed as their historical knowledge advances. Some recommend the use of peculiar key words and rhymes as aids for remembering dates. The writer has found it best to teach about a dozen of the leading events as recommended for Standard III., and to connect dates with them, and have these carefully committed to memory and frequently repeated, so as to keep them constantly fresh in the mind. The intermediate dates should be connected with the sovereigns who were reigning, the dates of whose accession and death should be learned and repeated frequently. Or the dates of events of secondary importance may be collected into tables with other similar events, and then be committed to memory. For many years it has been the writer's practice to require the elder scholars to repeat their "*Date Tables*" with the other advanced tables on Friday afternoon. These Date Tables include the following:

The chief epochs in English History.

The sovereigns of England, in families.

The chief battles under the Plantagenets, in the Wars of Roses, in the Civil Wars, in the War of the Spanish Succession, in the American War, and the Peninsular War.

The chief legal enactments.

Apart from the actual value of this knowledge in itself, such lessons provide a useful exercise for the memory. We ought to make acquirement as easy as we can for our boys, but we must get them to use their faculties for themselves, and "learning by heart" is a good means of educating the memory. *Historical tables must be repeated frequently*; if they are well known, it is not likely that the pupil will fall into such ludicrous inversions of history as we occasionally find mentioned in Inspectors' reports and elsewhere.

Biography is a useful means of imparting historical knowledge in a pleasant way.

This method of instruction has not received the attention it deserves, and yet it would be possible and frequently profitable to teach the history of a period in a series of biographical lessons on the great men of the period. For example, the history of George the Third's reign might be well taught in a series of lessons on the elder Pitt, Washington, Napoleon, Nelson, and Wellington, and the teacher would have the advantage of being able to excite the interest of the boys by recounting the instances of personal adventure in which the heroes of the lesson were engaged.

It is a fault in our teaching that the history lessons are too often im-

HISTORY.

personal, and void of human interest. They are narratives of deeds without actors. And yet history has been made by "men of like passions" with us, and it is likely to add to the interest and usefulness of the history lesson, if we take pains to show how the personal character and endowments of the great men of history fitted them to take part in the events of their time, how they seized their opportunities, and how they persevered gallantly against opposition until they achieved their purpose.

Miscellaneous Hints on Teaching History.

1. *The teacher should read for himself the History of Greece and of Rome.* He ought also to know something of the *History of modern Europe*, and he should avail himself of any opportunity that presents itself of reading the large and comprehensive works of Freeman, Froude, Macaulay, Hallam, and Hume.

For Greek and Roman history the writer would recommend Dawson Turner's "Heads of an Analysis" of the History of Greece and of Rome, to be read with a more formal history. Green's "*Short History of the English People*" should be read by every teacher.

2. *Aim at giving your pupils such a knowledge of history as shall enable them to discharge their duties as citizens in an intelligent way.*

A sympathetic recital of the story of old heroes who suffered for conscience' sake, and who bought our liberties at great cost to themselves will do much to lead our pupils to set a proper value on their privileges as Englishmen. The long struggle between the powers in the state, the sovereign, the barons, the clergy, the people, and the steps by which our noble constitution has been arrived at, should receive careful elucidation. Boys who have been thoroughly indoctrinated with such matters, are not likely to set a light value upon their rights or to part with them easily.

3. *In order to lead boys to arrange their written answer to a question on an historical event properly, it is well to use the following scheme:—*

| | | |
|-------------|---|-------------------------------|
| 1. Causes | { | (a) Remote. (b) Immediate. |
| 2. History. | | |
| 3. Results | { | (a) Immediate. (b) Remote. |

4. *Make use of events, persons, and places connected with the neighbourhood of the school in the history lessons.*

5. *Connect the teaching of History and Geography as far as possible.*

Use a map in the history lesson; draw sketch-maps and plans on the black board. An interesting lesson on "*The Battle of Waterloo*" might be made by showing the positions and objects of the contending armies during the three days, June 16th, 17th, 18th, 1815.

6. If you can maintain the discipline of the class, it is desirable to *allow the pupils to make notes* of the lesson as it proceeds. This should be the rule in an upper class.

7. *Do not confine historical lessons to wars only.* Let the *condition of the people* at the time be a primary point in your lessons.

Their manners, dress, and modes of life should be taught, and attention should be paid to the progress of the Constitution, and to the great men of the time.

8. You may often use *historical poems* and other works with good effect.

The old ballad "*Cherry Chase*" for example, may be used as an illustration of the normal state of feud, which used to exist between the chieftains on the English and Scotch border. Milton's sonnet to Cromwell would serve in part for a recapitulation to a lesson on the Civil Wars, and would do something towards showing the earnest spirit which animated the men of that time. Andrew Marvell's lines on the execution of Charles I., manifest the admiration which was extorted even from the political opponents of that monarch, by his noble bearing at the last. So also, several of Wordsworth's sonnets breathe the hopes and fears of the nation during the wars with Napoleon.

The writers just mentioned, lived during the events which inspired their muse. Many others have written of transactions purely historical, but they succeed in throwing a new interest into the events they describe, by the vigour of their language and the charm of their style; and the teacher ought to avail himself of the aid they give. Aytoun and Macaulay may be cited as writers of this class, and "*The Execution of Montrose*" and "*The Spanish Armada*," as examples of the poems which may be used. Shakspeare's historical plays contain much true history, and will be useful reading to pupil-teachers on this ground alone.

Other instances will readily occur to the teacher.

9. *Historical pictures* are suitable ornaments for the school-room.

10. *Genealogical tables* so drawn up, as to show the relationship of the various members of the Royal family, and their claims to the throne, should be written on the black board, and copied by the boys. Dates should be entered also.

These tables are very suggestive, and are at times almost sufficient to recall the historical events of the period to the mind of the well-read student. Pupil teachers should introduce such tables into their answers in their various examinations.

11. If a list of two or three of the chief events in the reign of each sovereign be made out, connected with the proper dates, and committed to memory, a complete synopsis of English History is provided. Teachers should do this for their scholars and for themselves. This skeleton however ought not to be considered as an adequate knowledge, but the teacher and his pupils should be able to give an intelligent account of the events he has noted.

If a pupil teacher can do this, and can connect the events by a correct narrative, he need not fear the History paper in the Queen's scholarship examination.

12. *Pupil teachers should accustom themselves to answering questions on paper.* It is sometimes a want of practice rather than a want of knowledge which prevents them from making satisfactory answers in their examinations.

The following points should be carefully mastered by the pupil teacher.

The Roman, Saxon, Danish and Norman invasions, with their consequences.

The conquest of Ireland and of Wales.

The Scotch and French wars of the Plantagenets.

The claims of various of our sovereigns to possessions in France, and the provinces actually held by them at different times.

The Wars of the Roses.

The Civil Wars.

The reigns of Anne and of George III.

They should also accustom themselves to answer such questions as "Compare the actions and character of Marlborough and Wellington." "Institute a comparison between Pitt and Fox." A proper answer can only be given in these cases, after extensive reading and actual thought on the part of the respondent; i.e., he must have gone through the processes which make historical reading valuable. A "general knowledge of history," as this is frequently understood, is insufficient for the purposes of the teacher, and will not enable him to pass his examinations with credit. Genealogical tables and details, as well as broad generalizations and leading facts, should be found in the answers to questions on history.

GRAMMAR

Its Province and Utility. A well-known writer says that "*English Grammar is the Art of speaking and writing the English language with propriety.*" A later writer tells us that "*Grammar is the Science of words.*"

The first makes Grammar to be "*an art.*" Now an art is something practical, it is learned *by doing it.* The art of speaking and writing with propriety will be acquired most expeditiously by actual practice in correct speaking and writing.

The second definition is larger than the first, and really includes it and more. But the special value of the study of Grammar as "*a science,*" is not so much in the absolute utility of its facts as in the mental discipline which it affords.

Difficulty of the Subject. Grammar is hardly ever so popular a subject as History or Geography. It requires more thought, and thought of a higher kind. Progress depends upon the faculty of discriminating and apprehending mental distinctions.

In an ordinary Parsing lesson, for example, each fact which is given about a word requires a separate mental effort on the part of the pupil. It is not to be wondered at, that such an exercise would be unpopular with those who do not like the trouble of thinking. The teacher himself must be strongly impressed with the value of the subject, and must have good powers of arousing and maintaining attention, if he is to enjoy his teaching of this subject, and to succeed in it.

Grammar as "*the art of speaking and writing with propriety.*" The immediate aim of the teacher who has this for his end, will be to furnish his pupils with a good stock of words, and to cultivate taste and skill in using them.

The best means at the teacher's disposal for attaining this object appear to be:—

1. Much Reading and Transcription from good authors.

The Reading lessons acquire a new value when looked at from this point of view.

2. Committing selected passages to memory will be of service in teaching the proper arrangement of words, as well as for the increased vocabulary which it gives.

3. Spelling Books, especially those which show the derivation and meaning of words, will help the pupils to understand this force of the words they use.

4. Practice in using words. Words are not truly our own until we can use them at will, so that the teacher must contrive exercises in which the pupil makes use of the words he has learned.

These may consist of simple sentences formed after a set pattern, or framed so as to contain certain words; or the *Composition* exercise may take the form of *Essays* or *Letters* on subjects chosen by the teacher. *Paraphrasing*, or putting the thoughts of others into our own words, (and in a sense the analogue of translating from one language to another) is a useful, though generally a thankless exercise. *Abstracts* of lessons which have been given, *Synopses* of historical periods, and the like, are all valuable exercises for this purpose. *Some such exercise ought to form part of almost every night's Home Lesson.*

5. Collective Lessons. New words are frequently introduced in these under circumstances which are likely to impress them on the mind of the pupil.

6 Formal lessons on Grammar and on Logical Analysis will help the pupil to understand the construction of sentences, will furnish him with rules for regulating his speech, and will teach him what forms are allowable.

But these will not exercise so much influence as practice in using words, although considerable attention should be paid to them, even on the restricted view of the province of Grammar which we are now considering.

7. Habitually correct language in school. The words that we commonly hear, the forms of speech with which we are most familiar, the conversation of companions, and the talk of the home, are powerful in determining the words that we use, and the

mode in which we use them. Too often these influences are antagonistic to the teacher. *The habitual use of correct language by the teacher, the careful correction of the mistakes that the pupils make from time to time, and an unvarying persistent requirement of accuracy of expression, are matters which demand his careful attention.*

Grammar as the science of words. In this aspect the study of English Grammar occupies the same place in elementary schools as the study of the classics holds in a university education.

It is in this side of the subject that the special difficulty lies, and it is here that its value as a mental discipline is found. It is much easier to think about tangible objects than about ideas and notions themselves, and we recognize this in our teaching when we proceed from the concrete to the abstract. But the elements with which we deal here are mental distinctions, and not objects which are perceived by the senses. No considerable progress can be made until the pupils are able to think about their thoughts.

The systematic study of Language has always occupied a prominent place in a liberal education. It affords a form of mental culture which cannot be obtained from any other study.

At our Universities, until comparatively recent times, the ordinary course of study seems to have been limited almost exclusively to *Mathematics*, and to the "*Humanities*." The one includes all the sciences which pertain to magnitude and number, "the exact sciences;" the other includes Grammar, Latin, Greek, Rhetoric, Poetry, studies which were considered to have an exceptional power in "humanizing" and polishing the student.

The prominence that has been given to the subject in the education of boys from the time of the Tudors downwards is well-known, and is indicated by the name given to so many educational establishments, "*Grammar schools*."

There is no doubt that as a study, it tends to foster clearness and precision of thought. *Words are the vehicle for the expression of thoughts*, and the accuracy and completeness with which we can succeed in imparting our thoughts to others, will depend upon the words we use and the mode in which we use them. And further, *connected thought itself requires the mental employment of words*; our thoughts cannot be laid hold of and appropriated until they are put into words. If then, words be the instru-

ments of thought, and the means for the expression of thought, it is fair to conclude that the more we know of words, and the more fully we can command them, the better shall we be able to think, and the better able to express ourselves. And any study which increases our familiarity with words increases our ability to think and our ability to communicate our thoughts to others.*

General method in a lesson on Grammar. The effect of the Grammar lesson depends very much upon the teacher and his methods. In studying Grammar there are distinctions to be noted, and rules to be learned and applied, and two ways are open to the teacher in introducing these.

1. *He may begin with the distinctions and rules as he finds them laid down for him in the Grammar book;* he may cause these to be learned, and may require the pupil to work the exercises upon them.

This is the usual method, and it affords a useful exercise for the memory and the judgment.

2. *He may select examples which will serve his purpose, and by employing them judiciously, may lead his pupils to see that there are distinctions in words, that it is necessary to classify and arrange, and to employ technical terms,* and he may even guide the boys to the discovery of rules for themselves.

This is the inductive method in Grammar; it is to be preferred to the other; but it requires more power in the teacher.

If the first plan be adhered to rigidly, the pupils are kept at work for a considerable time at subjects which are in the main arbitrary and unmeaning to them. They cannot comprehend the purpose, and have only a very indistinct idea of the value of the study. Yet there is no doubt that after a time the pupil is able to apply the rules he has learned, and that he becomes acquainted with the general principles which underlie them.

* The idea prevails with many people, that Grammar is merely a contrivance for regulating speech, or in other words, that correct language depends upon Grammar. Now the Grammar of a language can only be made from a study of the language itself, the Grammar alters as the language alters. The Grammar of modern English is very different from that of the English of Edward the Third's reign. In fact, the language rules the Grammar, although grammatical rules tend to perpetuate the specialities to which they refer.

In the second case, the lessons will be more agreeable from the beginning. But inasmuch as the teacher takes the lead, and as the lessons are necessarily oral, he must be sure that the pupils have thought with him, and he must see that they can formulate the knowledge they have acquired, and can apply it to new cases. As is generally the case when good results can be obtained by independent methods, it will be possible and advisable for the teacher to employ both methods in combination, and thus achieve a better result than he could get from the exclusive use of either.

A lesson on Grammar to a Junior Class. (II. and III. Standards.) We will suppose that the teacher wishes to explain the essential structure of the simple sentence, and the property and use of the Noun and the Verb.

1. He chooses a few common names and asks the boys to say something in brief about them.

In this way he *obtains such sentences* as the following, which he writes upon the black board.

Fishes swim. Fire burns. Birds fly.

2. His pupils will be prepared for the statement that each of the above is the expression in words of a complete thought, for they have just gone through the process. The *teacher can*, therefore, *introduce the definition of a sentence*, and require his boys to make sentences from subjects which he gives.

3. From a comparison of the three sentences given above, the pupils are led to see that *each is composed of two parts, one denoting an object, the other an action.*

This leads to the introduction of the technical terms "*Noun*" and "*Verb*," which should be defined, the definition committed to memory, and exercises given upon it.

4. Or if the teacher chooses, he may introduce the terms "*Subject*" and "*Predicate*" in the same way, mentioning the two parts of the sentence at first, as (1) "*that of which we are speaking*," and (2) "*that which we say about it.*" Exercises should follow.

This will be enough for one lesson. If the teacher has succeeded in implanting correct rudimentary ideas on these matters, he may amplify his

definitions in a subsequent lesson, after he has given examples calculated to serve his purpose.

5. It is easy to see how the *Adjective* and *Adverb* may be introduced as modifying the meaning of the *Noun* and *Verb*, and the *Pronoun* as the substitute for the *Noun*.

Numerous examples of their use should be adduced.

6. The following order should perhaps be followed in introducing the parts of speech ;—*Noun, Verb, (Article), Adjective, Adverb, Pronoun, Preposition, Conjunction, Interjection.* (*a*) *Their use should always be shown by employing them in sentences,* (*b*) *They should be carefully defined,* (*c*) *Exercises should be given to test and strengthen the pupils' knowledge.*

Lessons on Grammar treat of the Classification, the Inflexions, and the Logical uses of words.

I. **The Classification of Words.** This may be best taught by *oral lessons*, and the teacher has the option as to the special method he will employ. (See General Method, &c., in this paper.) He may begin with words by themselves, or with words as parts of sentences. (The writer's opinion as to the preferable method has already been mentioned.)

It will be possible for the teacher to lead his lads through the very processes which the grammarian must pass through in this branch of the subject. He may show that there are differences in words, that some have certain properties in common, though they differ from all others, and that it is possible after a sufficient examination, to arrange all words in a few classes. By a wise use of carefully-prepared examples he may *show the distinctions and lead up to the necessary definitions*, which ought to be continually present in his mind as he proceeds. The *definitions should then be stated in exact terms, and be accurately learned*, by the boys ; they then serve as tests for classifying words in future cases of difficulty. This point having been reached, it remains for the teacher to *give plenty of practical work*, so that his lads may become expert and confident ; the exercises in the Grammar-book will help him here. If the “Parts of Speech” be taught thus, the knowledge of the pupils is likely to be more intelligent, whilst their progress will be at least as rapid as when they are taught on the “Book” method.

Definition. It will be noticed that “Definitions” are often required in teaching Grammar and all other sciences. It is, there-

fore, necessary that the teacher should be able to draw them up in accurate and concise terms. This he may do by attending to the following rules, and by giving a fair amount of time to practice in framing them.

Definition should be "per genus et differentiam," i.e. it should contain a general term which comprehends the name to be defined, and a special term which calls attention to some property possessed by the object and by no other.

It would not be sufficient to define "*Man*" as "*a being*," or as "*an animal*," for no special distinguishing property of "*Man*" is mentioned; there are many "*beings*" and many "*animals*" besides *Man*. Nor would it be enough to say that *man* is "*a being who reasons*," as this would include angels and the Supreme Being. But if we say that *Man* is "*an animal who reasons*," the definition would be correct, because the special property (reason) which distinguishes *Man* from the lower animals is mentioned with the name of the genus (animal). The following would also be correct definitions. "*Man is an animal (genus) who cooks his food*" (*differentia*). *Man is a mortal being (genus) with an immortal soul* (*differentia*). *Man is a biped (genus) who wears clothes of his own making* (*differentia*). *Man is an animal (genus) who uses fire* (*differentia*). It will be good practice for the young teacher to examine several definitions as he finds them in books, and to endeavour to frame others for himself. If he looks at the definitions of the "*Parts of Speech*," for example, he will find that the genus "*word*" appears in every case, but that the *differentia* is peculiar to each. *A Definition applies only to the object defined, and should be sufficient to distinguish it.** Synonyms sometimes stand for definitions, e.g. "*A Noun is a Name*."

II. The Inflections of Words.

These are numerous and involved; many lessons must be given upon them, and copious exercises used to supplement the oral instruction.

The following are the most important subjects that will require special lessons. They are arranged in something like the order in which they should be introduced. Some of them involve logical distinctions rather than inflections, but they are mentioned here as being the most convenient place for alluding to them.

1. *Number.* (begin with Noun.)
2. *Gender.*

* The teacher who wishes to see this matter adequately treated, must consult a work on Logic. But it may be well to mention, that a question involving this point was set in a recent examination.

3. *Kind*. (Take "Common," "Proper," "Abstract" in Nouns as an example. The Noun should be taken first, the other parts of speech as occasion requires afterwards.)
4. *Person*. (Begin with Pronoun, then Verb.)
5. *Degrees of Comparison* of Adjectives.
6. *Tense*.
7. *Voice*.
8. *Mood*.
9. *Case*. (This is exceptional. See later on under I(1).)
10. *Agreement*. (Note the inflexions consequent upon this.)

Irregularities should generally be explained as they arise. But in all these matters the teacher must exercise his *discretion*. In teaching some of these subjects, (Tense for example), it would be unwise to make our first lessons exhaustive. If we teach broad facts first, and proceed thoroughly as far as we go, we shall do well. Details may come afterwards.

The writer would like to impress the necessity of paying careful attention to this side of Grammar on all young teachers. It is of the greatest importance, although we are forced to allude to it here in but a cursory manner. Students are found who have but the haziest notion as to what Inflection is, and how it arose, and what purposes it serves in language. Such questions as the following form good exercises for Pupil Teachers:—

What is Inflection?

To what inflexions are Nouns (or Pronouns, &c.), subject, and for what purposes are the inflexions severally used?

Which parts of speech are inflected in English, and why?

Elder scholars will listen with pleasure and profit to the teacher who tells them that there were three numbers to Nouns in Anglo-Saxon, and five cases; that these numbers and cases were distinguished in the main, by changes in the form of the words themselves; that "the Norsemen got rid as far as possible of inflexions, and so prepared the way for the greatest change that Anglo-Saxon has undergone, viz., the substitution of prepositional phrases for inflected forms of Nouns." And if the teacher can show the inflexions of one or two Nouns in Latin or in Greek, in addition to the Anglo-Saxon, he will succeed in giving his boys one of the most valuable lessons on language that they could receive, even if they forgot all the details, and only remember the general facts that in all languages as far as they know, *the forms of words are altered to express differences of meaning*, and that *languages change greatly in the course of ages*.

Etymology, the Roots of Words. It is often possible to

explain words in an effective manner by referring to their etymology. This is not the case, however, with all words, and the teacher must be very careful not to hazard a guess in this matter.

Such words as "*Blacksmith*," "*Backwoodsman*," carry their explanation on the surface, and the teacher who has a little acquaintance with Latin, can see the meaning of "*Import*," "*Invincible*," "*Nonentity*," and other easy words. When he is sure of his ground, it is generally advisable to adopt this form of explanation in an upper class. The following examples will show how this method may be used.

| | | |
|-------------------------------|---|--|
| Invincible (Lat.) | In = not vinco = I conquer ible = { Adj. term = able | not conquerable; not able to be conquered. |
| Palaeontology (Gr.) | Palæos (<i>παλαιος</i>) = ancient onta (<i>οντα</i>) = beings logos (<i>λογος</i>) = a discourse, &c. | a discourse about ancient beings; the science of extinct animals and plants. |
| Chivalry (Fr.) | Cheval—a horse | { the equestrian orders; { the knights; { knightly conduct. |

The teacher will find it worth his while to make himself acquainted with the ordinary prefixes and affixes, and to learn as much as he can of the roots of our words, that he may be able to explain them thus.

If any young teacher has an opportunity of seeing Trench's work "*On the Study of Words*," let him read it eagerly, and learn from it the use that a scholar may make of his knowledge of classical languages in teaching English.

It is scarcely possible to do much in studying the Etymology of words in school at present. But some of the advanced pupils might be profitably employed in this way, and we hope that more will be possible by and bye.

Desirability of some knowledge of Latin. If the teacher has some acquaintance with other languages than English, and especially if he has made fair progress in Latin, he will find such knowledge to be of the utmost value.

Not only will he be able to trace the origin of many of our words, and to see a meaning in them which is not evident to those who are not in the secret, but his ideas as to the functions of language are raised to a higher level when he can compare the Grammar of another language with that of his own, and can begin to generalize, even if it be but in a rudimentary fashion. The student's ideas of "Inflection," for example, are widened

enormously when he sees the possibilities of this branch of Grammar as exemplified in the declension of Latin or Greek Nouns, even if he go no further.*

III. The Logical uses of Words, the uses of words as parts of sentences. "Every law of language is based on a law of thought. All parsing and grammatical analysis is founded on logical analysis. To teach the science of words is therefore, to give system and order to the thoughts."

The simpler forms of Logical Analysis might be introduced much earlier than is usual in our schools.

The Lesson on the "*Noun*" and the "*Verb*," which was roughly sketched just now, would, with very little modification, serve to introduce the "*Subject*" and "*Predicate*" of a sentence.

Boys cannot understand "*Case*" until they can recognize the main parts of the sentence readily. One of their greatest difficulties in parsing is overcome when they know that "*the subject of the sentence is always Nominative in case to the Verb in the Predicate*," and that "*the Object is in the Objective Case, and is governed by the Active Verb in the Predicate*." The desirability of connecting logical analysis with the Grammar lesson is now becoming more generally recognized, and books have been drawn up to meet this want, among which may be mentioned the "*First Book of Grammar and Analysis*," by Mr. Curtis.

Every sentence should be analysed before it is parsed in the Grammar lesson.

The use of Logical Analysis in teaching Reading has been mentioned under that subject.

Special points in Analysis. In the practical lesson on Analysis, it is needful to pay special attention to these points. (1) Distinguishing the Subject, Predicate, and Object of the Sentence, and (2) the Noun, Adjective, Verb, and Adverb, with the positions they occupy, and *the forms which may be substituted for them*. The teacher must give lessons to show that words,

* Some writers, Mr. Fearon among them, recommend the study of Old English. This is a valuable help, but, for at once enlarging the views as to the possibilities of language, it is, in the writer's opinion, inferior to the study of Latin or of Greek. Those who desire to prosecute the study of Early English, will find good books for their purpose in the "*Clarendon Press*" Series, and the writer would especially recommend "*Specimens of Early English*," Part II.

various kinds of clauses, and subordinate sentences, may occupy the same relation in a sentence.

It is well for pupil teachers to be able to make ready and complete answers to such questions as "*What may stand as the subject in a sentence?*" "*What are the forms which the object assumes?*" &c. With a little thought it is easy to arrange the matter of such answers in a way which will be suggestive to boys, e.g.

| | | |
|---|------------------------------------|---|
| A walk | | } |
| It | | |
| To walk..... | | |
| To walk rapidly | | |
| To walk in the country, &c. | | } is pleasant |
| Walking | | |
| Walking with a friend, &c. | | |
| That we should walk, &c. | | |
| The man | cut | a stick. |
| The old man | cut easily | an oak stick. |
| The man who is old | cut in the wood | a stick of oak. |
| That man who is approaching the end of his life | cut with a hatchet that he carried | this stick, which has been part of an oak tree. |

If analysis be taught in this way, and the technical terms be introduced after showing the need for them, and after giving suitable illustrations of their use, the exercise becomes interesting and valuable to the learners.

Rules of Syntax. The teacher will find it necessary to have certain rules of Syntax committed to memory. These can usually be illustrated by and perhaps deduced from simple examples. They should then be formulated, and committed to memory, and exercises should be given upon them, as in other cases.

Among such rules we may mention as of primary importance:—

1. Agreement of Verb with its nominative in Number and Person.
2. "Active Verbs and Prepositions govern the Objective Case."
3. Agreement of Relative and its Antecedent.
4. "The Verb 'to be' takes two Nominatives, one before, the other after it, &c."

Other important rules which do not rank so high as the above are:—

5. That affecting the "Nominative Absolute."

6. That affecting the "Nominative of Address."
7. That affecting the construction of "Nouns of Time," &c.
8. That affecting the "Factitive Accusative" and others.

Whenever in a parsing lesson, any one of these rules is employed, the rule should be quoted, whether the parsing be oral or written.

Parsing has been called the "A B C of Grammar." This is only partly true, for although parsing is a means of instruction and a testing exercise in the early stages, it is equally valuable for introducing and testing such of the more recondite parts of Grammar as we may have the opportunity of taking up later on. It should begin as soon as the pupil has mastered the rudiments, and it should be continually used throughout the entire course.

Teach the boys to arrange the details of this exercise properly; there should be a recognized order in which each is mentioned.

Also, in the oral exercise, require the pupils from time to time, *to give a reason for every fact* which they mention, i.e., cause them to put into words the process through which the mind must pass in parsing. For example, the word "*Man*" in the following sentence would be thus spoken of;—

"*Man*," a *Common Noun*, because it is the Name given in common to all men. *Masculine Gender*, because it is the name of a male.

Singular Number, because it refers to but one.

Third Person (if Nouns be allowed to have "person") because we are speaking about it.

Nominative Case, because "*Man*" is the subject of the sentence.

The following scheme in parsing explains itself. "*The man broke a window.*"

| | |
|--------|--|
| The | Def. Article, pointing out "Man." |
| man | Com. Noun, Mas. G., S., 3., Nom. to "broke." (R. I.) * |
| broke | Strong, Active, Verb, Indic. Past, Indef. Tense, S., 3., agreeing with "Man" (R. II.) * |
| a | Indefinite Article, prefixed to "window." |
| window | Com. Noun, Neut. G., S., 3rd., Object. by "broke" (R. III.) * |

- * *Rule 1.* The Subject is nominative to the Verb in the Predicate.
- 2. Verbs agree with their Nominatives in number and person
- 3. Active Verbs govern Nouns in the Objective Case.

This exercise may be varied with the advanced boys by requiring them to arrange the given details under their proper heads, Etymology and Syntax.

ORGANIZATION.

Under this head are included numerous matters which pertain to the machinery and orderly working of the school.

Among these we may mention—

The Plan of the School-room and Class-Rooms.

The Teaching Staff—Master, Assistants, Pupil Teachers, Monitors.

The arrangement into Sections and Classes, and the Standard of Classification.

The Time-table.

The Apparatus and Furniture.

The Changes, Drill, and Exercises.

The Registers.

Other miscellaneous points, such as the arrangements for securing neatness, care of school furniture, the comfort of the boys who stay to dinner, the careful management of the ink, the proper marking of the “mark-slate,” and other matters numerous and diverse.

It is manifest that a proper discussion of all these points would occupy much time, and would double the size of this book, whilst the subject itself is not of such vital importance to the young teacher as those which we have already treated. In the Government Syllabus this subject forms part of the second year's course for students in Training Colleges, and the whole matter can be dealt with more easily and thoroughly in a few conversational lectures, than it can be in a book of moderate size.

Yet it is worth while for the pupil teacher to notice and consider these matters during his apprenticeship, so that he may be prepared to enter intelligently into the discussion of them at the proper time.

The following exercise has often been proposed in examinations, “*Write an account of the organization of your school.*” If the pupil teacher fail to answer this, it will not be from lack of matter; the difficulty would be in knowing what to choose and what to reject.

The writer would recommend him, in the first place, to keep the *time-table* in mind, and to show how it was suited to the *plan of the room* and the needs of the scholars. The *teaching staff*, the arrangement into *sections*, and the *principle* on which this was done, should be briefly noticed, and *any other points* of importance or of peculiarity might follow.

REGISTRATION.

Registration is commonly placed as one of the subdivisions under "Organization," but its importance justifies a brief special mention.

Registers and the *returns* to be obtained from them, form an essential part of the certificate examination, which no candidate is allowed to omit.

An outsider would think it next to impossible for a pupil teacher to have a good practical acquaintance with registers for years, and yet to have a difficulty in dealing with them when he enters a training college. Yet such is often the fact. Almost all "know how," to work their registers, but some cannot "do" it. This usually arises from a want of care and accuracy during their apprenticeship, so long continued as to have developed into a habit. *The great requirement in a register is that it shall be accurate*, and the writer would seriously advise pupil teachers to be scrupulously careful in marking and making-up their registers, and to use themselves to checking and verifying the entries they make.

Every pupil teacher should *make himself thoroughly familiar with the "Class Register,"* which is the most important of the school registers, and that which is committed to his care.

Before he enters the training college he should *try to become acquainted with the purpose and mode of arrangement of all the registers and books of account kept in the school*, and he should be able to draw up a specimen page of any of the following registers:—

The Admission Book.

The Class Register.

The Fee Book.

The Summary.

The Log Book.

The Portfolio.

The Treasurer's Cash Book. (This is not so important to the pupil teachers.)

He should familiarize himself with the instructions issued by the Education Department, for keeping registers, and should carry out these hints in his own case. He should also read the *regulations of the New Code* as far as they affect Registers. It will be of great advantage to him if he does all this before entering a training college. *Practical work at registers* is the best teacher, and this he can obtain during his apprenticeship.

"Form IX." and the "Examination Schedule," and the "Duplicate Schedule," and other documents should be mastered by senior students. But, on the whole matter, more may be done by oral instruction and illustration than by pages of print.

REWARDS AND PUNISHMENTS.

Rewards and Punishments commonly appealed to in governing. Rules for government are enforced by two classes of motives. Discipline is maintained by a system of Rewards and Punishments.

1. This principle has its highest exemplification in God's government of the world. He has given us directions for regulating our conduct in this life. We are incited to obey by actual reward, or by promise of reward for obedience, and by actual punishment, or by the threat of punishment for disobedience.

2. Society enforces the morality it enjoins by the same motives. "The Law" acts by a series of penalties on those who disobey. Extraordinary merit and extreme liberality in the discharge of duty are rewarded by the esteem of other men, and in very exceptional cases, by the bestowal of special honours on those who deserve them.

3. Our Schools, the little states that we are called on to manage, are to be governed on the same principle, and we are justified in resorting to rewards and punishments in our government,—

1st. By analogy; other governments do so.

2nd. By the effectiveness of rewards and punishments as motives in school.

Definition. Reward is the bestowal of pleasure, punishment the infliction of pain, in some form and degree.

Pleasure acts as an incentive, pain as a deterrent motive.

We explain the action of Rewards and Punishments as means of government, by the principle known in mental philosophy as "*Association by Contiguity*." If two experiences are invariably conjoined; i.e., if one be always accompanied by the other, we expect the concomitant whenever the one occurs.

If pain be thus associated with wrong doing, wrong doing will suggest the pain, and the pain will exercise its deterrent effect according to the amount of dread it inspires.

If a certain course of conduct is associated with pleasure, the anticipated pleasure is an incentive to perseverance in that line of conduct.

It is to be noted, however, that *the invariableness of the concomitance is an important element in the association.* If wrong-doing and pain, as well as well-doing and pleasure are *always* connected, the pain and pleasure will exercise their fullest force as motives. But if there be a break in the connection, and especially if the breaks be frequent, the connection is of necessity esteemed more or less accidental. Note therefore, the high importance of *certainty* in the application of rules. It is the *certainty rather than the severity* of a punishment, that renders it effective as a deterrent motive.

Object of Rewards. Rewards are given as a recognition of desert in the past, and an incentive to continued or increased striving on the part of the recipient, as well as a stimulus to healthy emulation on the part of his schoolfellows.

The chief objections to their employment are :

1. *The difficulty of restraining emulation within due limits.* Some earnest teachers consequently refuse to make use of rewards at all as means of discipline.

2. *The tendency to look on the reward as the end or object aimed at,* a "quid pro quo," an equivalent return for so much good conduct. It is very desirable that all should find their highest satisfaction in doing what is right, simply because it is right. This motive, however, is seldom very strong in boys, and the teacher may be able to use a lower motive in order to develop the higher.

Rewards should not be made cheap and common,—they ought not to be easily earned.

In Society we find that the ordinary fulfilment of every-day duty is followed, not by positive reward (unless indeed such conduct be so long continued as to constitute a distinction), but by a negative *freedom from blame.*

Rewards in School should not be bestowed for mere ordinary industry or good conduct. *They should be given only for positive merit of an extraordinary character in the individual who receives them.—"They should be given only when there has been an option, and the individual has voluntarily chosen the higher alternative."*

Two Classes of Rewards are available in school. We will style them—I. Secondary Rewards; II. Tangible Rewards or Prizes.

REWARDS AND PUNISHMENTS.

I. Secondary Rewards cost the Teacher nothing. They owe their value to the honour which is attached to them in the estimation of the pupils.

For example, it would be esteemed an honourable distinction by the boy who is told to "*stand on the form*" because he has brought the best Home Lessons in his class on a particular morning. On the other hand, it would be a disgrace for a boy to be made to do the same thing because his lessons are badly prepared. Note, therefore, that what is a reward in one case may be a punishment in another.

The efficacy of Secondary Rewards as motives, depends upon the Teacher's discretion and his character for fairness. He must not bestow them at random or in a capricious manner.

Among the secondary rewards which are easily available in school, we may particularize the following:—

1. *Taking places in class for a given period.* Intellectual shrewdness and superiority will be the usual elements in determining a scholar's position, but general conduct should also be an important factor in the case. If places be allotted in accordance with the results of the quarterly examination, taken in conjunction with the "*conduct marks*" for the quarter, such places will have considerable value attached to them by the scholars. The plan thus becomes an effective instrument of discipline in the hands of a wise teacher.

2. *Changing places during lessons* promotes care and attention, and tends to foster a healthy emulation.

3. *Commendation.* This should be judiciously distributed, and not scattered broadcast. *Discrimination is needed*, so that we may neither praise without sufficient reason, nor withhold commendation where it is really deserved. The teacher should always show his appreciation of honest painstaking effort. He should be especially on the watch to reward the "*dunces*" with an encouraging word whenever he can lawfully do so: this is almost the only reward these poor fellows can get, apart from the consciousness of having done their best. Whilst the teacher is careful not to be lavish with his praise, he ought to be equally careful not to use it grudgingly. *His manner should be the reverse of captious.* It is noteworthy, that it requires a higher discrimination to see merits, than to discover defects. There are cases in which commendation will be more efficacious than blame.

4. *Offices of Trust*, such as keeping the mark slate, getting the books and apparatus ready for the teacher, and the like. Simple as these appear, it is possible for the teacher to make good use of them in his

SCHOOL METHOD.

school, and that teacher who has never tried them, or who finds them inoperative, has much to learn.

II. Prizes, Actual and Tangible Rewards. If these are given, it should be given in accordance with the following principles:—

- (a) They should be within the reach of all.
- (b) They should be given for real desert, and not for intellectual ability alone.
- (c) They should be distributed fairly.

To take a practical case: suppose the teacher wishes to improve the character of the home lessons. It will be wiser for him to propose a reward for the boy whom he thinks "strives the most" during a given period, than for "the boy whose home lessons are done the best." This will meet *a* and *b* above.

The feeling of the class as to the fairness of the award will depend upon their estimation of the teacher's character. In order however, to do away with any suspicion of unfairness, the writer has been in the habit of keeping a "*mark slate*," and of entering in a book the number of marks which a boy obtains every day. He has found this a most effective instrument of discipline, and he recommends the plan, with the needful modifications, to his fellow-teachers. An "*extra*" mark is a valued reward for a sharp answer, or for other merit, and to "*lose a mark*" is generally an effective punishment for carelessness or want of proper preparation. This "*mark slate*" was ruled thus:—

| Name. | Attend- ance. | | Clean- liness. | Home Lessons | Extras. | Deduct. | Total. |
|-------|------------------|----|-------------------|-----------------|---------|---------|--------|
| | M. | A. | | | | | |
| | | | | | | | |

Irregular, inexpensive, unexpected prizes, such as a lead-pencil or drawing-book, may be given by a judicious teacher with good effect, and more frequently than the more expensive prizes.

Special rewards may also be given with propriety for special excellencies, such as regularity of attendance, punctuality, good conduct, and even special or general proficiency, provided the general conduct of the recipient be good.

Punishment. Laws are "imposed under a penalty for neglect or violation. The penalty is termed 'punishment.'" —*Bain*.

The institution which issues laws and inflicts punishment is "*Government*" or "*Authority*." Punishment rather than reward is relied upon to secure obedience to human laws.

Objects of Punishment. The objects to be borne in mind in administering punishments are:—

1. **Reformation of the Offender.** (a) He must feel that the *punishment is just*.

(b) The *punishment should* be such as to make an *impression* on him, so that he may dread its repetition, and be led to avoid the conduct which brings the punishment.

(c) He should *look on the punishment as a degradation*. It should never elevate him for the time into a hero.

2. **Example**, so that others may not be guilty of the like fault.

(a) The punishment should be inflicted for *conduct which all acknowledge to be wrong*.

(b) It should *make an impression* on the spectators, so that they may dread a similar infliction.

(c) It should *not arouse their sympathy* with the offender by its undue severity.

Note that the school tone must be good, if punishment is to be properly effective.

3. The element of *retributive justice* does to a certain extent enter into the question. There is a species of satisfaction in giving an offender his deserts, at all events in gross cases. But this feeling must be carefully watched, and he who administers the punishment should, if he err, err on the side of mercy.

There is *danger that an offender may regard the punishment he receives as a set off* for his bad conduct, and that when he is punished, he is clear, and the account is straight again. It need hardly be said that this notion must be strongly guarded against. He should feel that he has degraded himself, and that he can only be reinstated in his former position, by watchful avoidance of fault for the future.

SCHOOL METHOD.

Other principles to be borne in mind in employing punishments are :—

1. *Only such conduct as the child knows to be wrong is lawfully punishable.*

The teacher ought carefully to strive to look on the matter with the offender's eyes, and to apportion his punishments accordingly. He must be careful also not to confound that which "is inconvenient and annoying, with that which is culpable."

2. *Avoid all kinds of punishment as far as, and as long as possible.*

Do not allow your punishments to be "cheap."—Young teachers should note this.

3. *Make use of the lightest punishment that in your judgment is calculated to secure the objects 1 and 2.* Endeavour to keep well within your resources.

4. *Be on your guard against resorting to any particular mode of punishment, because it is easily applied and immediately effective.*

It is to be feared that the cane is used more frequently than is absolutely necessary because it is effective at once.

Punishments which Pupil Teachers are commonly allowed to use in school.

1. *Rebuke* may be conveyed *in manner or in words.* It should in degree be proportionate to the gravity of the offence, and should never be intemperate.

A good teacher can do much with this simple means. Its effectiveness depends on the estimation in which he is held. Let young teachers strive to acquire the power of using this instrument well. Remember that if it be continually used, it loses its effect.

2. *Detention after School Hours.* This punishment may take two forms: the delinquents may be required to remain perfectly still, *or* tasks may be imposed on them.

The former of these is a suitable infliction for carelessness at drill, or restlessness during class-work. The latter may be resorted to in cases of lateness, want of due preparation, and laziness. In both cases there ought to be thorough supervision.

3. **Sending out for Corporal Punishment.** This is the last resort of the pupil teacher, and should therefore be employed as seldom as possible.

Try to keep the discipline of your class in your own hands. Resolute effort on your part will do wonders, and you are by it preparing yourselves to become good masters. The writer has known pupil teachers who have maintained a high state of discipline by simple expedients, such as taking the names of about six of the best boys during the morning, and allowing these boys to go home five minutes before the bulk of the class, and by keeping the six most careless boys for a time after their classmates have gone.

Never allow yourself to be led into breaking the school rules by taking this matter of corporal punishment into your own hands. Nothing lowers a teacher so much in the estimation of his class as breaking a rule in such an underhand way. Do not resort to other forms of corporal punishment which unwise pupil teachers are sometimes betrayed into, such as causing the boys to hold slates or other weights, or to assume an uncomfortable position. Such punishments may produce permanent physical injury.

4. **"Coventry."** The effectiveness of this mode of punishment depends entirely upon the character of the relations existing between the teacher and the scholars themselves.

If the teacher be habitually pleasant, and has a free, "elder-brother" manner of dealing with his scholars, he may make a temporary reserve towards one or more of his boys a powerful means of intimating his displeasure. Very great care must however be exercised, in encouraging this mode of marking disapprobation among the boys themselves. The writer remembers a case in which a big boy left the school in consequence of the "cold shoulder" that was given him by his class-mates after he had been guilty of a serious breach of school-rule.

The punishments which follow are out of the province of the pupil teacher.

Corporal Punishment. The writer believes that it is necessary at times to resort to this mode of correction. Its special danger consists in the ease with which it can be applied, and its immediate effectiveness. It is therefore desirable for the teacher to keep some check upon himself, such as entering the names of those who have been punished in a book, and noting their

SCHOOL METHOD

offence. The instrument used should be a cane, and the blow should generally fall on the hand, so that the teacher himself may see the physical effect produced. The writer feels strongly that *this punishment should generally be administered in private*. Send the offender into a class-room, or into a lobby, or even into the yard. He has then *no temptation to assume a mock-heroism*. It is a serious blow to the teacher's authority if a bold boy resist him, and a struggle ensue. The chances of this difficulty arising, and its damaging effect if it should arise, are reduced to a minimum when there are no onlookers. *A lighter punishment than would otherwise be needful as a deterrent example, may almost always be inflicted* when only the offender is to be affected. If the punishment has been just, and the teacher's manner what it ought to have been, there will be little danger of the boy who has been punished assuming a "don't-care" air when he resumes his place. On the principle "*Omne ignotum pro magnifico*," a punishment inflicted in private will be effective on other boys though they do not see the actual infliction. This mode of punishment is necessary in such cases as the following, provided always that the culprit is fully aware of the gravity of his offence.

1. *Vice*. Offences against morality; falsehood; cruelty, and bullying.

2. *Habitual carelessness*, and the like.

Expulsion. When a boy's influence is positively harmful, and the teacher cannot adequately counteract it, it becomes his duty to resort to this *ultima ratio*.

We cannot in the interests of our scholars, afford to play dangerous experiments with our school. The welfare of our scholars as a whole is more important than that of an individual scholar, important as we allow that to be. But we ought to satisfy ourselves that we have employed every legitimate means, before we resort to so severe a measure in any case. The writer has probably used this punishment more freely than most of his fellow-teachers, but except in very glaring cases, it has usually been after correspondence with the parents, and it has more commonly taken the form of a voluntary withdrawal after notice that such a step was desirable in the interests of the school. Most of the odium that would otherwise attach itself to the offender is thus avoided, while the school is relieved of his presence.

Some of the Common Faults of School-boys should, in the writer's opinion, be treated as follows:—

Petulance or Hasty Temper. Send the boy to a room by himself. After an interval, go and speak with him. The probabilities are that he will cool down and be ashamed of himself in a few minutes. Point out to him the necessity of being on his guard against falling into this fault for his own sake. Also let him see that it cannot be tolerated in the interests of the school. This will generally be sufficient.

Sullenness. This is a difficult matter. It consists in a passive resistance, an intangible refusal to obey and be pleasant. On the first occasion that this fault shows itself, send the boy to a private room, or set him apart from his fellows. After a considerable interval, go to him, and endeavour to get him to see that such conduct cannot be allowed, and if you can, get him to promise to try to amend. If the fault assume a serious aspect for a second time, again set the boy by himself, and send for his father or mother.* On their arrival, state the case plainly, in the boy's hearing, being careful not to exaggerate the fault. Tell them that every boy in the school must submit to rule, and that it is your duty to see that this is done. Say that if the boy is to remain in the school, he must conform to the regulations, and that if he is guilty of this fault in the future, he will be sharply dealt with. Sensible parents will see the reasonableness of this, and will leave the matter in the master's hands. If they are unwilling to do this, the boy must be taken away from the school. If, after speaking with the parents, the fault again become serious, immediate and decided corporal punishment should be inflicted, and repeated as often as is really necessary. (In all such cases, it behoves the teacher to try to get the boy to see the matter in the light in which he himself regards it. Hasty punishments are undesirable.)

Laziness. Detention and tasks are the appropriate punishment. Corporal punishment will rarely be needed, especially if the school tone be good.

Unpunctuality. Detention with or without tasks should be employed to correct this fault. If frequent, the parents should be communicated with. If a boy be frequently late by his own fault, and the milder punishments are ineffectual, recourse must be had to corporal punishment. Very much may be done by the example of strict punctuality on the

* The writer is aware that this is an unusual proceeding. But he has firm faith in its wisdom, and has proved its efficacy in numerous cases. If a boy feels that his parents will sustain the teacher in any action that the latter may think necessary, all threats of "I'll tell my father!" and even the hope of trading on the antagonism, which some boys think must necessarily exist between teachers and parents, will be futile.

teacher's part. This, and regular detention ought to be sufficient in the majority of cases.

Untidiness. The character of the boy's home will have great influence in this matter. A good example should be set at the school. The teacher should speak to the untidy boy privately, and endeavour to secure the co-operation of parents in correcting this fault.

Want of Care of School Furniture. The teacher himself should show a respect for it, and should exercise careful supervision over the boys. Easels, easel-pegs, black boards, maps, dusters, and other articles should have their appointed place. Boys will look on it as a reward if they are deputed to superintend the giving out and collection of such articles of school furniture. The work of the teacher is thus lightened, and he knows where to look in case of default. In cases of wanton and wilful damage the delinquent should be required to pay for the necessary repairs.

Impertinence can scarcely assume serious proportions in a good school, where children and teacher understand one another. If a new boy should be guilty of this fault, the teacher might show in his countenance the surprise he must feel, and if the tone of the school be good, the offender will not obtain any sympathy from his class-mates. Under such circumstances, a teacher *may* be able to treat a first exhibition of this fault very leniently. But if it be repeated, he must at once resort to vigorous measures.

Insubordination. *This also can hardly become serious in a good school,* except with a new boy. If it be frequent, the discipline is lax, and must be strung up. If the case be a solitary one, let the boy know the consequences of breaking the school rules, show him that other boys are obedient, and advise him to be so. It is not very likely that the fault will be repeated. If it should be, the teacher must enforce his authority.

Cruelty to little Boys,—Bullying. The writer would use sharp and decided corporal punishment in this case, and would inflict it publicly, contrary to his usual practice. The offender ought to be made to feel that such conduct is disgraceful.

Falsehood. It is often difficult to awaken boys to a due sense of the enormity of this fault, and this is the primary desideratum. "Being found out" has too often more terrors for them than "doing wrong." They are tempted to resort to prevarication, or to more direct lying, in order to save themselves from the consequences of their shortcomings and misdeeds. The teacher should show that he is shrewd enough to detect prevarication and falsehood, so that even on the lowest ground it is not desirable to resort to subterfuges. But his great aim in this matter should be to lead his pupils to form an adequate estimate of the meanness and wickedness of this vice. His own conduct should be marked by the strictest integrity and straightforwardness. His mode of dealing with his

pupils should be such as to lead them to feel that *truthfulness even pays best in the long run*. Honest confession should be esteemed as almost an amends for venial fault. (Of course the teacher will be shrewd enough to see that the culprit is not trading upon his wish to inculcate a high tone.) The precepts and examples of Holy Scripture, and the general consensus of opinion among civilized men ought to be dwelt upon.

If a boy knows that this vice is detestable, and that honest confession will be esteemed as the first step towards amendment, and is then guilty of lying, he ought to be severely punished. But unless a boy really feels that the vice itself is degrading, corporal punishment should scarcely be resorted to except as a means of leading him to look on it in its true light. The whole subject is extremely serious, and it is impossible to lay down an invariable rule, which shall be applicable in all cases, and with pupils of varied temperaments.

A P P E N D I X.

A.-I. (a) TEACHING NOTES OF A LESSON

(OR OF TWO OR THREE LESSONS) ON

MAGNETS.

Only those portions on the left-hand side of the line would appear in the "Teaching Notes." The parts in brackets on this side the line do not go on the black board, but are for the teacher's guidance. The other entries on the left-hand side, should appear on the black board, at the end of the lessons.

Hints on the right-hand side of the line are intended to show how the lesson would be given, but these would not appear in ordinary "Teaching Notes." It will be observed that an indication of method appears in brackets on the left-hand side.

The writer would make *three* lessons from these notes, each of about 35 or 40 minutes. He would divide the matter at the double lines.

The lessons are suited for a class from 12 to 14 years of age.

| [Apparatus, | Paper loops | Apparatus needed. |
|--|-------------|--|
| Loadstones | | |
| Magnets | | <i>Paper loops</i> , with fine silk attached, for suspending loadstones, and bar-magnets. |
| Cardboard and filings | | |
| Iron bar and hammer | | Two pieces of <i>loadstone</i> , and a pair of <i>bar-magnets</i> . |
| Galvanic pair | | |
| Compass, and basin of water with cork | | <i>A horse-shoe magnet.</i> |
| Black board, &c.] | | <i>Card-board</i> , and fine <i>iron filings</i> . <i>A poker</i> , or other iron bar, and a <i>hammer</i> . |

NOTES OF A LESSON ON MAGNETS.

Apparatus needed (*continued*).

Some steel knitting-needles.

A galvanic pair (copper and zinc plates in acidulated water), connected by copper wire, on which a helix has been coiled.

A Mariner's compass; and also a piece of cork to float in a basin of water, on which a magnetised knitting needle may be laid.

Black board, chalk, duster.

Properties.

Polarity, has two "poles."

[Magnet into filings
Filings on card.]

1. Show by dipping loadstone and bar magnet into iron filings, also by placing them beneath card on which filings have been sprinkled.

2. Mutual attraction and repulsion.

Like poles repel, unlike attract.
[Find like poles and educe.]

2. Show by suspending magnets to find "like poles," which should then be marked. Then take one, and present its ends to corresponding and different ends of its fellow.

3. Every part of a magnet is itself a magnet.

[Break knitting-needles and show with iron filings.]

3. Show this by magnetising a knitting-needle, and then breaking it into short pieces, each of which should have its ends dipped into the filings.

4. Magnets can communicate their properties to certain other bodies, e.g.,

Soft iron and steel.

(a) Temporary—Soft iron.
[Use armature of bar magnets.]

4. (a) Show by placing a piece of soft iron in contact with one pole of magnet that it becomes magnetic so long as contact is maintained, or whilst it is near the permanent magnet.

(b) Permanent—Steel.
[Rub needle.]

(b) Rub knitting-needles by "single touch" to show.

[“Dip” of the needle not noticed.]

Kinds.

1. *Natural*, Loadstone or lode-stone—"Magnet."

[Leadstone, Magnesia.]

An ore of iron, magnetic iron ore.

[Fe_3O_4]

2. *Artificial*, produced in various ways.

Loadstone, altered form of lead-stone.

"Magnet," so named from Magnesia, old city in Lydia.

May relate story of shepherd whose crook adhered to rock on Mount Ida.

Modes of Making Artificial Magnets.

1. *Contact* with other magnets.

As in case of rubbed knitting needle and when soft iron is in contact with magnet.

2. *Proximity* to other magnets.

As in case of soft iron placed *near* one pole of magnet.

3. *Action of the earth*. The earth is a magnet, and has magnetic poles.

Place iron bar in magnetic meridian and in line of dip. Administer a sharp blow with the hammer. Show that bar has become magnetic, by presenting opposite ends to a suspended magnet.

Carpenters' tools
Iron ships
Lamp-posts and
iron railings, &c. } become
magnetic.

Mention these facts, and after showing boys later on, how to make a simple compass, allow them to try it.

. *Voltaic Electricity*—Galvanism.

Shew with filings. Dip the helix into filings; they will adhere if galvanic current be faintly powerful.

(a) Connecting wire becomes magnetic.

Place needle in paper in helix, allow one end to project, and show with filings.

(b) Iron bar inclosed in helix becomes magnetic.

[Filings.]

Uses.

1. *Telegraph*.

[Suspended needle and galvanic pair.]

1. Show principle by coiling a wire so that it may surround a freely suspended magnetic needle, which can move in the circle formed by the wire, and pass a current first in one way, then in another.

e. Mariner's Compass.

[Paper collar box, with pin, steel. Knitting needle on cork in water.]

2. Get a thin bar of steel (cristalline steel), about four inches long; glue a small hollow button, or any other hard smooth cone, to the middle of one face. Get also a paper collar box, and run a pin through middle from beneath. Magnetise the steel, and balance it on the pin, and you make a model of the mariner's compass; or, magnetise a needle and allow it to float on a cork in a basin of water. It will come to rest only in one position.

2. (a) TEACHING NOTES OF A LESSON.

ON

AN INSECT.

Copied from actual Teaching Notes which have been in use.
Suited for boys about 12 years of age.

[Specimens required—Stag-beetle, bee, butterfly, house-fly.]

DEFINITION.—An animal whose body is composed of rings, and deeply cut into three main parts (Lat. *in-seco*), and with jointed limbs on the middle part.

Parts—**3.** Head, thorax, abdomen.

(Spiders 2 parts; centipedes many parts.)

I. Head—2 jointed *antennæ*.

2 simple or compound *eyes* (cockchafer, 8000).

Mouth with appendages.

(a) Masticatory (beetle).

(b) Suctorial (butterfly).

(a+b) Modified (bee).

II. Thorax—3 segments, generally amalgamated more or less.

(Chest) 6 legs, 1 pair on each segment. [Spiders 8, lobsters 10, 0, 1, or 2 pairs of wings. centipedes many.]

III. Abdomen—Segments usually moveable.

(Stomach) No legs or wings on abdomen in true insects.

Often contains weapons, stings (bee, wasp).

Respiration—By *Spiracles* (breathing holes), 1 or 2 on each body-segment, and by *Tracheæ* pipes passing from spiracles through the body.

Changes—Metamorphosis—all insects more or less.

Larva (Caterpillar).

Pupa (Chrysalis).

Imago (Butterfly or moth).

[THE THREE FOLLOWING LESSONS WERE GIVEN BY STUDENTS,
AND THE NOTES ARE PRINTED FROM THOSE WHICH THEY ACTUALLY
PREPARED.]

I. (b) FULL NOTES OF A LESSON
ON
THE SPIDER.

Age. From seven to nine years.

Time. Forty minutes.

Apparatus. Diagrams, duster, chalk, black board.

Object. To reveal to the lads, beauty in the meanest creatures, and to inculcate kindness to animals.

Introduction. Relate to the lads the mythical story of Arachné and Athena, in such a manner that the subject of the lesson is not mentioned directly. Then put such a question upon it, that the answer received will be "The Spider."

| HEADS. | MATTER. | METHOD. |
|---------------------|---|---|
| General Description | Body of spider consists of two chief parts:—1. Head and chest; 2. Abdomen or belly. Eight eyes, eight legs, two palpi. | Educe contents of this paragraph by reference to diagram. Explain use of the "palpi." |
| Head and Chest | No division between head and chest. Skin harder than on the rest of body: that on back called the "shield;" that on front, "breastplate." Eyes range in | Difference between spiders and insects in this respect. Explain words—shield and breastplate. |

| HEADS. | MATTER. | METHOD. |
|----------------|---|---|
| | number from 2 to 8. In spiders with 8 eyes, 2 are in front of the head, 2 on top, and 2 on each side. Simple, not complex like eye of fly. 4 jaws, 2 upper and 2 lower. In the upper jaws are poison claws, through the points of which poison oozes into any creature that is seized by the spider. <i>Chest</i> contains stomach. | Difference in position according to difference in number. Reason for difference. Explain jaws and poison fangs, by reference to diagrams. Mode by which the poison is injected. General position of this organ. |
| Legs. | Eight in number, 4 pairs, all seven-jointed; hairy; last joint has 2 claws. All spring from chest. | Use of claws. Why hairy? |
| Abdomen. | Larger than head and chest; soft; covered with spots; contains the heart; contains eggs. | Reason for softness. Common position of heart. |
| Web. | Made of silk. <i>Spinnerets</i> in abdomen, 3 or 4 in number; sometimes 10,000 tubes. Silk when spun sticky; soon hardens. Cross threads first spun, then those connecting the cross ones. When web is completed, spider lies in a corner to watch. Small flies killed at once with poison fang. Larger ones, e.g., wasps first have threads spun all round them, then killed. (Fight between spider and wasp.) | Difference between silk of spider and silk-worm. Why hardens? Show mode of spinning web by diagram. |
| Food and Uses. | Spiders feed upon flies and other insects; some of larger size, upon humming-birds. They prevent the | Why wasps, &c., are enveloped in threads previously to being killed. Parts refused by spiders. Cannibals. How? |

FULL NOTES OF A LESSON ON THE SPIDER.

HEADS.

MATTER.

METHOD.

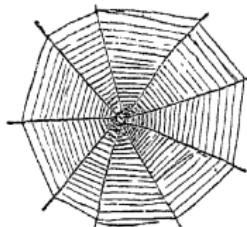
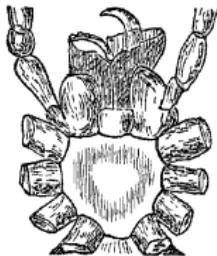
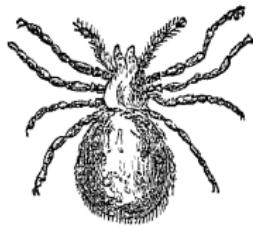
too rapid increase of insects. Silk used in France for making gloves.

Kinds

House, garden, water, and mason.

Nest of Mason.

BLACK BOARD SKETCH.



HEAD AND CHEST.—Skin hard, shield, breastplate, stomach.

ABDOMEN.—Large, spotted, soft, heart, eggs.

EYES.—Simple, 2, 4, 6, or 8. Differ in size.

JAWS.—4; poison jaws.

LEGS.—8; 7 jointed; claws; palpi.

WEB.—Silk spinnerets, sticky.

KINDS.—House, garden, water, mason.

SCHOOL METHOD.

2. (b) FULL NOTES OF A LESSON

ON

A P U M P .

Age.—From 10 to 12 years.

Time.—Twenty minutes

Apparatus.—Tubes, valves, water, black board, chalk, &c.

Introduction. “I am going to show this morning the construction and working of a pump. There are several kinds, as common, force, and lifting pumps, but we shall take the former.”

HEADS.

MATTER.

METHOD.

Description. Is a machine for raising water above its level by means of pressure of the air. Consists of a box, cylindrical, closed at lower end by a valve, which opens upwards. To lower end of cylinder is attached a pipe, which leads into water. In the cylinder is a tight-fitting piston, which is worked up and down by a rod,—piston rod. In piston a hole has been pierced; this hole also closed by a valve, which opens upwards.

Meaning of “*surface of water.*” Explain “cylindrical,” and have it spelled. Show tubing closed at one end by a *valve*; pour water in; elicit result. Put tubing into water; elicit result. Elicit meaning of *valve* (Lat. “*valvæ.*”) Show piston with piston-rod; put it into tube, perfectly airtight; close fitting. Distinguish between piston and rod. Elicit what a piston is. Put diagram of pump on black board.

*Very inconvenient at times to raise or lower the piston-rod; something wanted to facilitate this,—a lever, called the handle. Just below top of cylinder a hole has been punched, a spout let in.

* This part to be taken, if time.

Briefly describe a lever, and show on board different kinds,—power, weight, fulcrum. Elicit want of a spout. Recapitulate description.

FULL NOTES OF A LESSON ON THE PUMP.

| HEADS. | MATTER. | METHOD. |
|------------|--|---|
| Principle. | Atmosphere exerts a pressure of 15 lbs. upon square inch. Now suppose a pipe, open at both ends, be placed in an upright position in water; *water rises in pipe to height of surface of water outside; pressure of air on water inside and outside the same. If most of the air be sucked out of the pipe, the water rises in it because the pressure is much less inside than outside. This is the principle of the pump, the piston is lowered, touches lower valve, then raised, air cannot get in at the top, but rushes in from pipe by lower valve. Air in the pipe cannot exert same pressure, water rises. Same process repeated, water rises higher, and enters cylinder by lower valve; piston lowered again, water cannot get back to the pipe, and so pushes up the piston valve; piston raised, water is carried up and emptied out. | Atmosphere synonymous with air Show how we can bear such a pressure; fishes in the sea. Inference. we are living at the bottom of an ocean *Use glass tubing and coloured water to shew this, applying mouth and sucking air out of the tube, so as to show how the water rises. It may be maintained at any height, by placing the thumb over the opening at the top of the tube. |
| | | Elicit what the various parts are, as they are mentioned, having them pointed out on the diagram. |
| | | Put another diagram on the board, representing quantity of air contained between water in pipe and lower valve, and between lower valve and piston, as pints. |
| | | Show model minutely, explaining working, calling attention to the valves. |
| | | Recapitulate principle and whole. |

BLACK BOARD SKETCH.

“COMMON PUMP.”—Machine for raising water.

PARTS.—Cylindrical box, valve at lower end (*valvæ, folding doors*).

Pipe leading into water.

Piston,—air-tight, close-fitting.

Hole in piston, closed by valve. Piston rod.

Handle to raise or lower piston,—lever; spout.

PRINCIPLE :—Air presses 15 lbs. upon each sq. in. of surface.

(*Various diagrams at times*).

3 (b) FULL NOTES OF LESSON.

ECLIPSES.

Age of boys, 12 to 14 years.

Time.—Thirty minutes.

Apparatus.—Black board, wooden balls, compasses, ruler, and illustrations of shapes of shadows in cardboard, made to fit the balls.

| HEADS. | MATTER. | METHOD. |
|--------------------------------------|--|--|
| <i>Motion of the Earth and Moon.</i> | The <i>Earth</i> has two motions:— (1) Turns on its axis once in 24 hours. (2) Revolves round the Sun once in a year. The <i>Moon</i> also has two motions:— (1) Turns on its axis once in about 29 days. (2) Revolves round the Earth once in about 29 days. | Motions shown by means of 3 wooden balls, and also by a diagram on the black board. (Necessary to ascertain whether this section is known; pass through it quickly.) |
| | | [5 min.] |
| | Moon's orbit is, therefore, a progressive circle, like that made by the wheel of a coach. | |
| <i>Shadows.</i> | Opaque bodies cast shadows. Earth and Moon will, therefore, have shadows. Shadows away from the Sun and conical in shape. | Which is the best side of the street to walk along on a hot afternoon? What causes the shadows? |

FULL NOTES OF A LESSON ON ECLIPSES.

| HEADS. | MATTER. | METHOD. |
|--|--|---|
| | Deep shadow called <i>Umbra</i> . Lighter around called <i>Penumbra</i> . Earth's shadow thrown an immense way into space (about 100 diameters); therefore, far past the Moon (about 30 diameters). The Umbra of the Moon does not always reach the surface of the Earth: greatest area it can cover is a circle of 180 miles in diameter. | Show this by means of paper cones, and also on the black board. Elicit meanings of words <i>Umbra</i> and <i>Penumbra</i> (Lat. <i>umbra</i> and <i>pene</i>). Explain that the Moon's distance from the Earth varies. [5 min.] |
| Eclipses the Result of the fore- going. | Lunar Eclipses. Moon's light from the Sun. When it passes through the Earth's cone of shadow, the Sun's rays are intercepted, and the Moon ceases to shine, i.e., it is eclipsed, <i>total</i> , <i>partial</i> , or <i>central</i> , according as it plunges wholly, or partially into the cone of shadow, and its centre coincides with the centre of the cone. Visible from all parts of the world that have Moon above the horizon. Eastern side plunges into shadow first. Loses her brilliancy by insensible degrees in passing through the Penumbra. Never exceeds two hours. | Meanings of the words <i>lunar</i> and <i>eclipse</i> (Lat. <i>luna</i> , Gr. <i>eclipo</i>). Explain these with aid of the paper cones, and circular pieces of cardboard. Reason why lunar eclipses are so common, and yet why they do not take place monthly. Moon comes between Sun and Earth once a month, but not often in an exactly straight line with centres of Sun and Earth. Why? Elicit how the length of time of the eclipses varies. |
| | Solar Eclipses. When the Moon interposes herself between the Sun and Earth. | Reason why total eclipses of the Sun are so rare. |

HEADS.

MATTER.

METHOD.

Moon's shadow only sufficiently large to cover a part of Earth's surface at one time.

Total only in the Umbra.

Partial in the Penumbra.

Central. Straight line from spectator to centres of Moon and Sun.

Annular. Bright ring around.

See also reason above given, why Lunar eclipses do not occur every month.

Explain these also with the card-board discs.

Note the cause of the ring (Lat. *annulus*.)

Call especial attention to differences between Solar and Lunar Eclipses, and to explanation why we do not have two Eclipses every month.

[15 min. or more.]

Recapitulate. [5 min.]

THE BLACK BOARD SKETCH

In this case, consisted of diagrams to illustrate motion of Earth round Sun and of Moon in its "progressive circle." Diagrams of Solar and Lunar Eclipses also appeared, on which the "Umbra" and "Penumbra" were marked.

Only a few words appeared on the board, and these were chiefly technical terms connected with Lunar and Solar Eclipses.

CRITICISM.

B.—CRITICISM.

A "Criticism Form" is helpful to young teachers in their early attempts to criticize the lessons of their fellow-teachers. All are ready to acknowledge the value of a properly-managed criticism lesson, as a means of impressing the methods and principles which should be observed in practical teaching, upon students and pupil-teachers. A form like the following helps to direct attention to the salient points in the lesson, and to prevent criticism from becoming pointless and diffuse. But there is a danger that such mechanical aids may be made to take the place of independent thought; in other words, they may be abused. The mere filling up of each space with an adjective is a poor substitute for thoughtful and appreciative criticism. As the skill of the critic increases, the form may be discarded, or be replaced by one that is less elaborate.

In criticizing others, avoid indefiniteness; try to bear in mind some instance of the merit or demerit that you are noticing, and be prepared to illustrate your point by referring to it. Let your criticisms be straightforward, avoid carping and fault-finding, but at the same time remember that the purpose of the exercise is to expose faults and to notice merits, and do your duty with decision and firmness. Commendation may give pleasure, but the other side of criticism is more likely to be valuable.

CRITICISM FORM.

| | | | |
|---------------------------|--------------|--------------------------|--|
| (a) The Teacher. | Language | Grammatical | |
| | | Free from provincialisms | |
| | | Other points | |
| Tone | | | |
| Manner | Magisterial | | |
| | Kind | | |
| | Other points | | |
| Eye and Ear | | | |
| Power of command | | | |
| Power of fixing attention | | | |
| Tact | | | |
| Thoughtfulness | | | |

| | | |
|--|---|---|
| (a) The Teacher. <i>(continued.)</i> | Acquaintance with subject | |
| | Position and posture | |
| | Sympathy with class | |
| (b) Lesson Notes. | Neatness | |
| | Character of writing, etc. | |
| | Fulness | |
| (c) Lesson. | Matter | Interesting _____ Valuable _____ Suited to class _____ Well arranged _____ |
| | Method | Suited to matter _____ Suited to class _____ Inductive or no _____ |
| | Explanations Spelling Questions | Form _____ Thought _____ Distribution _____ Sequence _____ Rapidity _____ Other points _____ |
| | Recapitulation | Parts _____ Whole _____ |
| | Finished or no. | |
| (d) Black Board and Illustrations | Prepared beforehand | |
| | B. board used freely | |
| | B. board used well | |
| | Lesson scheme | |
| | Illustrations suitable | |
| (e) Class. | Well in hand | |
| | Interested | |
| | Orderly | * |
| | Instructed | |
| | Educated | |
| | Tone | |
| (f) Results. | 1. Value of new facts imparted | |
| | 2. Value of intellectual processes gone through | |
| | 3. Improved moral tone | |
| | 4. Permanency | |

C.—NOTES ON EXAMINATION,

FOR

PUPIL TEACHERS AND OTHERS.

I. Before the Examination. Preparing for Examination.

(a) *You are doing yourself substantial good, and preparing yourself in the best of all ways for examination in the ordinary school subjects, if you teach them conscientiously and thoroughly.* Nothing fixes details so firmly in the mind as teaching them. So that by careful teaching of these, you set yourself free to use most of your own time for higher work. When also in your more extended reading, you light upon new and striking facts, try to bring them into your lessons, for your own sake as well as that of your boys.

(b) *Steady continuous work, spread over a year, is far more fruitful than a few spasmodic "spurts" at intervals.*

(c) *Make yourself well acquainted with the purpose and scope of the examination.* As far as it is in your power, map out your time so as to give a due amount to each subject; in this, consider your weak points, so that you may give greater attention to them.

(d) *Try to get questions which have been set in similar examinations, and practise answering them.* It is not enough in an examination to have knowledge, you must know how to use it.

(e) *Cultivate a habit of thoroughness in all your work.* This should appear not only in the fulness of your information, and the method in which you arrange it on paper, but also in the character of the writing itself. It is annoying to find bad punctuation in a paper which is otherwise well-written.

(f) *Get a good text-book in each of the subjects that requires it.* Read this carefully, think about it, make notes on it, and master it. When you have reached this point, you may take another book,

but as a rule, it is not advisable for beginners to have many books in hand at one time. One good text-book thoroughly mastered is better than three or four half-known. Yet it is advantageous sometimes to master a section or chapter of the chosen text-book, and then to read what another author has to say upon the same. In fact, it would be well to read as much as you can, only be thorough; do not mistake extensive reading for extensive knowledge.

(g) If you arrange your notes properly, *your note-book will help you greatly in recapitulation*. Write on alternate pages, so as to leave space for other notes on the same subject, derived from subsequent reading.

Hints on the various subjects of Examination, for the use of pupil teachers during their apprenticeship.

1. **Reading.** Teach it well, and accustom yourself to read long extracts aloud. Thoroughness in teaching, is the best preparation for examination in *Reading, Writing, Spelling, and Elementary Arithmetic*.
2. **Arithmetic.** Get at the reasons for the rules. Work at processes yourself. Try to work by Logarithms, and all advanced methods. (Teachers might do the *practical* work with Logarithms in Compound Interest, and all exercises involving long Multiplication and Division, or Involution and Evolution, much more quickly than by the ordinary methods. A very little practice will make them expert.)
- 3 **Algebra.** Reasons and processes as in Arithmetic. Accustom yourself to such exercises as "*Prove the Rule of Signs in Multiplication*," or "*Prove the Rule for Subtraction in Algebra*."
4. **Euclid and Geometry.** Learn Euclid's elements as far as you can. Try to find out and connect propositions which admit of it; (e.g. Euclid I. 47; II. 12; II. 13.) Accustom yourself to work at "*deductions*."
5. **Mensuration.** Do some practical measuring: draw figures, and apply your knowledge of Geometry and Arithmetic.

Some of the rules of Trigonometry are easy of application, and not difficult to understand: take the following two as examples.

I. $\sin A : \sin B : \sin C :: a : b : c$, where ABC is a triangle, and a , b , and c , the sides opposite the several angles A, B, C, respectively.

II. Sq. on AC = sq. on AB + sq. on BC + 2 (AB. BC. cos. DCB), where ABCD is a parallelogram, which of course may be made into a triangle by rubbing out AD and DC, or AB and BC. The value of the expression in the bracket will be— or + according as the angle is greater or less than 90° . (These formulæ are very useful too in the Statical "Composition and Resolution of Forces.")

6. Geography. Teach it well. Draw "*memory maps*" frequently. You will find it easy after a time to use the lines of Latitude and Longitude in these. Read a good textbook. A similar general plan holds also for *History* and *Grammar*.
7. Drawing. *Black board*, by practising day by day in school. Keep lines clear, and draw as much as you can with one sweep of the chalk.

Freehand. Draw "lines of construction" across the copy, and corresponding lines on your paper. "Work from the whole to the parts," the general form first, then the details.

Perspective. Learn the meaning of the ordinary technical terms; then master these two problems:—1. Find the dimensions, &c., of a *horizontal line* in perspective, by *Angular perspective*. 2. Find the *height of a vertical line* in perspective. The thoughtful student will see that the ordinary method of "*parallel*" perspective is really the same as that adopted in Problem 1.

- 8 Music. *Learn to play some musical instrument*, from notes of course. If possible, choose one which leaves you free to sing as well as play. Look on the five lines in the stave as parts of the "*Great Stave*," and refer the names, &c., to

notes to this. *Take an active part in the singing in your school.*

9. **Science.** Do not mistake a knowledge of the facts of a science for scientific knowledge. Learn *facts*, and search for *reasons*. You will require a good text-book; read it, make notes, *think*; keep on in this way till you have mastered it. *The true end of all scientific knowledge is generalization.* "Simplicity comes last." Try to perform experiments for yourself; home-made apparatus is frequently the best you can use.

10. **School Management.** The paper on this subject commonly contains questions intended to test the general intelligence, and the scope of the reading of the candidate.

As a teacher may be called on to explain *anything* which occurs in the course of his teaching, he ought to be a good "all-round man."

If you are called on to "*Explain*" an extract "*as to a class*," you must read the extract and understand it.

Will a logical analysis of the sentences make them clearer? Is it desirable to paraphrase them?

Which words can be explained etymologically or otherwise?

What illustrations of separate words, or of the sense of the whole extract occur to you?

What diagrams will be needed?

What use will you make of the black board?

11. **Latin.** If any one wish to teach himself Latin, let him proceed as follows:—Get Smith's "Principia Latina," Part I., or some other grammar with exercises; work on steadily at the exercises up to the regular verbs, learning each vocabulary as it comes, and repeating them frequently. Now get another book; Arnold's "Henry's" First Latin Book" will serve. Go on with the "Principia" from the point where you left off, and begin with "Henry's" from the beginning. You keep up your back knowledge, and ac-

quire new by using two books simultaneously. After going through the Irregular Verbs in the "Principia,"—by which time you will be fairly advanced with "Henry's,"—try to get a "Latin Reading Book," which contains a vocabulary; Valpy's "Latin Delectus" will do well. Now try to give about an equal amount of time to all three of these books, and you will find one will help you on with the other, and you will especially be encouraged, if you make rapid progress with the "Delectus." Should you come to a difficulty, try to conquer it; but do not spend very much time over it; go on to the next sentence, after marking your conqueror to be attacked when you get stronger. The plan here advocated is not commonly used, but if it be followed, the back knowledge is continually recapitulated, and the different modes which the different authors have of presenting the same fact, serve to illustrate it, and thus in some measure, make up for the want of a teacher. Progress in all collectively may be slow, but it is likely to be sound. After the student has gone on in this way until he has read 30 pages of the "Delectus," he may try Eutropius, and then Cæsar and Virgil. But he must master the peculiar Latin constructions, the "Ablative Absolute," and the "Accusative with the Infinitive," before he ventures to read Latin authors. After he is able to read, *practice in reading and writing Latin* is the best means of progress. He should *write* from the beginning, and continue this practice throughout.

II. During the Examination. 1. *Fill up any form* that is required, before you read your questions.

2. If the questions are in sections, *choose that question* from the first section *which you can answer best.*

3. *Never take a question because it is difficult*, unless you are *sure* you can answer it thoroughly, and then only when a large number of extra marks can be obtained by answering it.

4. *See that you really understand the meaning of the question* before you begin to answer it. Cases do occur in which from

SCHOOL METHOD.

want of care in reading the question, a wrong or an incomplete answer is given.

5. *Think for a minute how you will arrange your answer.* "Festina-lente," *Hasten slowly.* If you have scribble paper provided, set down on it the heads of your answer before you begin to write. If, as you write, other important points occur to you, set them down also on the rough paper, and thus save yourself the trouble of thinking about them whilst you write about other matters.

6. Having constructed your plan, *concentrate all your attention on the actual point* about which you are writing at the time, and go on from point to point through the question. Hold your thoughts well in hand.

7. *Do not make a "general" answer.* Introduce details; try to show that you *know* the subject.

8. *Avoid discursiveness; keep to the point.*

9. *Read your answer rapidly through,* to see that no lapses have occurred.

10. Go on to next section, &c.

11. *Map out the time* that you can allow to each section, so that you may be able to attempt all the questions which are allowed, and give yourself ten minutes for final revision.

12. *Do not make "shots"* at any question. If candidates would always confine themselves strictly to what they are sure of, there would be fewer failures, and fewer "second class" men.

13. *Try to write uniformly and well,* and arrange your paper so that its general appearance is pleasing. Underline important words, &c., to call the special attention of the examiner to them, and to make it easier for him to examine. Do not, however, make too many italicized words.

14. If, at the end of the allotted time, you have answered all the questions which you were allowed to attempt, and have filled your paper, *and have set down nothing wrong,* you have done well.

D.—HINTS FOR TEACHERS

PRACTISING SCHOOL.

The following scheme was drawn up by the writer for the use of students in the practising school. As students come from schools of different characters, and from all parts of the country, such directions were found to be necessary. It is printed here as offering a synopsis of the special points which should be presented to the young teacher.

SCRIPTURE LESSON. Aim at presenting the Scripture narrative in as striking a manner as possible.

Deduce such rules for the regulation of conduct and the formation of character as the selected portion suggests.

Endeavour to magnify the Bible as the best guide of life.

READING. Teach this subject: do not be satisfied with *hearing* boys read.

Read frequently yourself as a pattern to the class.

Insist on the careful attention of *all* the pupils throughout the exercise. Do not pass a sentence until it has been well read.

Allow mutual correction as a rule. This will help to maintain attention.

In the lower classes, see that the little ones point to the words as they or their classmates pronounce them.

When practicable, break up a large section into small draughts for practice, especially after simultaneous reading. Supervision, however, must be complete.

Your aim in this subject is to secure intelligent reading, and to see that the members of your class use their best efforts throughout the lesson.

SPELLING. Use all availing means of teaching this subject incidentally.

Much may be done by a judicious use of the black board during ordinary lesson. Pay great attention to oral spelling, especially when the lesson has been committed to memory

DICTATION. Should generally consist of words that have been learned, and of a sentence or more from the reading lesson.

Allow no copying.

See that all pupils strive to write as well as they can, and according to school pattern.

WRITING. Teach this subject. Notice carefully—(1) Straight *strokes*; (2) Round or oval *turns*; (3) *Junctions* in middle (II), except in small hand, when they should be at top and bottom (III); (4) *Fidelity* to the copy.

The writing should be uniform in each book, and throughout the class.

The books should be neat.

In Dictation, Arithmetic, and all exercises involving writing, insist on neatness and care in mechanical work.

Use black board freely to show faults and their mode of correction, as well as for pattern writing.

Pay especial attention to the backward boys.

Teachers will generally find it best to use a lead pencil themselves.

ARITHMETIC.—Strive to give pupils an *intelligent comprehension* of the rules they are learning, as well as *rapidity* and *accuracy* in working.

Mental Arithmetic and Tables must receive due care.

Mental exercises are the best introduction to a new rule.

Give frequent short lessons, and work frequent examples on the black board, especially with the duller boys. Use black board very freely.

On no account neglect Numeration and Notation.

Exercises should not, as a rule, involve the use of a great number of figures.

Let the quick and advanced boys proceed to higher rules. Cultivate the idea in the class that this is a reward.

To prevent copying, exercise careful oversight yourself, and also arrange the pupils in groups A and B, or A, B, and C, which should have separate sums. This will help you to secure individual work.

Pay careful attention to the neatness of all work. Properly-shaped figures, and ruled lines should be required.

Look especially after the slow and backward boys. Try to get all members of the class up to the class standard. The quick boys should be beyond it.

GEOGRAPHY. Use map and black board freely.

Encourage boys to use their own books, atlases, and slates, but do not allow disorder.

Do not let your lesson be confined to mere *facts*. Aim at cultivating intelligence, as well as at storing the memory. (*See next page.*)*

HISTORY. Seize two or three of the leading events, and group the information you give around these.

Try to present a vivid description.

The necessary dates and facts should be committed to memory by the pupils. When practicable, teach History and Geography together. (*See below.*)*

GRAMMAR. Simple analysis should precede parsing. The case of the subject and object, and the objective after prepositions should be taught at an early stage, and be frequently presented to the pupils.

Give lessons on the parts of speech and various inflexions, &c.

After the lesson, give numerous illustrative examples.

Insist on the pupils striving to work for themselves in this exercise.

In parsing, see that reasons can be given for each fact advanced. Use black board. Also require boys to parse on their slates occasionally.

*(*In these subjects*—Teach thoroughly what you attempt. Recapitulate carefully, and add the needed supplementary information. Arrange your notes on black board, so that they may present a synopsis of your lesson.

Give questions occasionally which involve answers of a few lines, which pupils should answer in writing.

Use the inductive method in teaching *Physical Geography*. The home lessons will be largely based on these subjects.)

GENERAL ORDER, &c. Each teacher is responsible for the order and attention of his class.

Exercise discretion in giving commands.

Insist on prompt exact obedience.

Let your manner be dignified and decided, but not needlessly obtrusive
Avoid noise.

Do not speak more than is necessary.

Endeavour to rule your class *yourself*, without the interposition of a master.

Teachers may detain their pupils after school-hours when they think it desirable. They must not, on any account, strike a pupil.

If every member of your class is doing his appointed work in the best way that he can, and with the least possible trouble to you, the order of your class is satisfactory.

The Standard at which you should aim is “*Excellence*” in all points.

If you see anything which can be improved, endeavour to improve it. Your plans, however, must not interfere with the general discipline and work of the school.

ELEMENTARY SCIENCE.

OBJECT LESSONS IN BOTANY FROM FOREST, FIELD, AND GARDEN.

A Teachers' Handbook of 33 Lessons for Standards I. & II.,

Being the First Part of a New Work on Botany as a Class Subject for Primary Schools.

BY EDWARD SNELGROVE, B.A. (Teacher of Botany).

PRICE 2/6.

REVIEWS.

"We quite agree with Mr. Snelgrove that 'botany, rightly taught, is the most purely pleasurable of the sciences, and none can be compared with it for the scope it affords to cultivate habits of observation or in respect to the accessibility of its objects to study.' The method on which this text book is constructed is clear and simple. The objects dealt with are such as, come under common observation—apples, plums, cherries, oranges, strawberries, turnips, cabbages, wheat, potatoes, etc."—*The Sheffield Independent.*

"Messrs. Jarrold & Sons have already gained repute by their capital issue of books for the young, and the present issue will enhance their reputation. Avoiding technicalities, so often an effectual barrier to the study of botany by children, the author has supplied teachers and parents with a valuable little guide which, by commencing with the study of simple known objects, will implant a love for what is really a fascinating subject. Both in plan and execution the work is admirable."—*The Manchester Courier.*

"The guiding principle adopted by the author in the preparation of his book, namely, that of using common objects for illustration of unknown characters and functions, not only arouses interest, but must impart a large amount of sound instruction. The book will be useful to teachers in elementary schools, and should be a means of opening pleasant paths to their young students."—*Nature.*

"Nearly everybody wishes to 'know something about flowers.' Mr. Snelgrove has prepared these 'object lessons' principally for the use of children in the first two standards, and the style is therefore easy and simple. Briefly, yet clearly, he puts it within the teacher's power to give, from these pages alone, upwards of thirty instructive and entertaining lessons on plants and flowers, fruits and roots. It is one of the very best of elementary botany books which have lately come in our way."—*The Publishers' Circular.*

LONDON: JARROLD & SONS, 10 & 11, WARWICK LANE, E.C.

JARROLD'S PUPIL TEACHER'S SERIES.

New Book for Pupil Teachers and Scholarship Candidates.

BY HERBERT WILLS,

*Author of "Synopsis of English History," "Synopsis of Scottish History,"
"Handbook of Euclid for Certificate Candidates," etc., etc.*

Crown 8vo, Cloth, price 3s. 6d.

The main object of this book is to set before students the fundamental principles of Algebra in a terse and methodic manner. Though originally intended for the use of Pupil Teachers and Scholarship Candidates only, the searching nature of the exercises contained make it suitable for students preparing for any examination within the limits of the rules treated on.

Mere mechanical ability to solve the various problems will not suffice. Definitions, statements of rules, proofs, fundamental principles, and particular applications, must be thoroughly mastered ere a student is in a position to successfully compete in any public examination. To this end the author has striven to simplify the theoretical portions of the subject.

Factors, the key to the Science of Algebra, have been very fully treated, and greatly used in the solution of Exercises where applicable. The use of factors materially abbreviates the solution of problems, and gives a neatness and clearness to examination papers, not attainable when the more cumbersome methods are used.

Almost the whole of the examples contained in this book are taken from examination papers proposed to Pupil Teachers, Scholarship and First Year Certificate Candidates, and from papers set by the College of Preceptors, Oxford and Cambridge Locals, Military and other Professional examining bodies.

It will thus be seen that one great value claimed for this work is that the student is attacking tests of a similar nature to those he may reasonably expect to encounter on the examination day. Apart from this, the character of the examples is such that it is believed no variation of the rules treated of has been omitted.

Great care has been taken in the selection and arrangement of the questions, so that whilst suggesting clear lines of thought they may gradually lead up to points of difficulty which, in the opinion of the Author, can best be overcome in this way.

This Algebra should be in the hands of every Male Pupil Teacher, because:

1. It has been written expressly for Pupil Teachers and Scholarship Candidates.
2. It follows closely on the lines of the Education Department.
3. The Definitions, Statement of Rules, Proofs, and particular Applications are concise and clear, and are such as will satisfy the requirements of Examiners.
4. The examples are very largely taken from previous examinations conducted by the Department.
5. No fear or failure need be entertained by a student who has gone carefully through the tests.

6. This Algebra is written by a gentleman whose name is a guarantee for a thorough knowledge of the science and a practical exposition of its difficulties.

London: Jarrold and Sons, 10 and 11, Warwick Lane, E.C.

Jarrold's Pupil-Teachers' Series.

THE PUPIL TEACHER'S GEOGRAPHY:

Political, Physical, & Physiographical.

A Complete Course of Modern Geography; including Sketch-maps and Diagrams as models for reproduction on examination papers; with pronunciations of place-names, and notes historical and etymological.

Arranged to exactly meet the requirements of the English and Scottish Codes from pupil-teachers on the subject.

BY J. H. YOXALL,

Secretary of the National Union of Elementary Teachers.

CROWN 8vo, CLOTH, price 3s. 6d.

CONTENTS.

| | |
|---|---|
| I. COURSE FOR THE FIRST YEAR. | COURSE FOR THE SECOND YEAR— <i>con.</i> |
| 1. The Physical Geography of Mountains and Rivers | 2. Climate |
| 2. The British Isles | 3. Climate and Productions of the British Possessions |
| a England and Wales | 4. Europe |
| b Scotland | 5. Latitude and Longitude |
| c Ireland | |
| d British Influence | |
| e The English Language | |
| f Imperial Federation | |
| 3. Australasia | |
| a Australia | |
| b Tasmania | |
| c New Zealand | |
| d Fiji | |
| e Australasian Federation | |
| 4. British North America | |
| II. COURSE FOR THE SECOND YEAR. | |
| 1. British India | |
| a Peninsular India (Hindustan) | |
| b The Indian Islands | |
| c Burmah | |
| | |
| | IV. COURSE FOR THE FOURTH YEAR. |
| | 1. America |
| | a North America |
| | b South America |
| | 2. Polynesia |
| | 3. Astronomical Geography |
| | |
| | MAPS AND DIAGRAMS. |

London: Jarrold and Sons, 10 and 11, Warwick Lane.

Jarrold's Teachers' and Pupil Teachers' Series.

By F. J. GLADMAN, B.A., B.Sc. (Lond.),

Late Superintendent of the Central Training Institution, Melbourne; and formerly Head Master of the Model and Practising Schools, Borough Road; Normal Master in the Borough Road Training College; and Inspector of Schools for the British and Foreign School Society.

SCHOOL WORK.

In Two Vols., price 4s. each; or in One Vol. complete, price 7s. 6d.

I. CONTROL AND TEACHING.

II. ORGANIZATION & PRINCIPLES OF EDUCATION.

EACH VOLUME IS COMPLETE IN ITSELF, AND CAN BE HAD SEPARATELY.

CONTENTS.

VOLUME I.

CONTROL :

- Managing a Class.
- Order.
- Attention.
- Discipline.
- Rewards and Punishments.

VOLUME II.

ORGANIZATION :

- Organization.
- Registration.
- Classification.
- Time Tables.
- Teaching Staff.
- The Schoolroom and its Furniture.

TEACHING :

- Class Teaching.
- Methods.
- Special Oral Lessons.
- Home Lessons.
- Reading.
- Spelling.
- Writing.
- Arithmetic.
- Geography.
- History.
- Grammar.

PRINCIPLES OF EDUCATION :

- Principles.
- Summary of Leading Educational Principles.
- The Mind and Intellectual Education.
- The Will: Moral and Religious Education.
- Physical Education.
- Appendix—
 - (1) Psychology and Logic.
 - (2) Table of Underived Feelings.

In "SCHOOL WORK" the author has attempted to supply what seemed to be a want in works dealing with Teaching and School Management. The book is intended to form not only a text-book and guide for Teachers, Students, and Pupil-Teachers in their ordinary school duties and when preparing for their respective examinations, but also for those Teachers who present themselves in the subjects of School Management and Science of Education at the London University and College of Preceptors.

London: Jarrold and Sons, 10 and 11, Warwick Lane.

JARROLD'S TEACHERS' AND PUPIL TEACHERS' SERIES.

Teaching of and Testing in
MENTAL ARITHMETIC.

Crown 8vo, cloth. 170 pages, Illustrated. Price 2s. 6d.

"WE have more than ordinary pleasure in calling the attention of our readers to this really admirable treatise on mental arithmetic. Many works have been written on the subject, but the author of this particular book has introduced many novel features that will at once commend themselves to intelligent teachers, and which, if carried out with any degree of spirit, will result in the maximum of benefit both to school and scholar. The part devoted to *Teaching* treats of short cuts to solving problems in the four simple elementary rules, calculations of cost, fractions and simple interest, and percentages, thus covering the ground of the whole work of the standards. The Conversational Lesson Notes, which follow, are not only novel but full of practical hints and wise directions for the guidance of teachers. The conversational paragraphs, which deal with an immense variety of subjects, leading up to questions that are both useful and interesting—Modes of Examination, Skeleton Questions, and an extended variety of well-selected miscellaneous examples, complete the most practical and suggestive work on mental arithmetic with which we are acquainted."—*Teachers' Aid*.

CONTENTS.

PART I.—TEACHING.

SHORT CUTS:—

THE FOUR SIMPLE ELEMENTARY "RULES."

CALCULATIONS OF COST.

FRACTIONS.

SIMPLE INTEREST AND PERCENTAGES.

CONVERSATIONAL MENTAL ARITHMETIC NOTES.

PART II.—TESTING.

MODES OF EXAMINATION.

SKELETON QUESTIONS.

MISCELLANEOUS QUESTIONS.

London: Jarrold and Sons, 10 and 11, Warwick Lane.

Jarrold's Teachers' and Pupil Teachers' Series.

THE HANDY BOOK OF OBJECT LESSONS. FROM A TEACHER'S NOTE BOOK. BY J. WALKER.

FIRST SERIES.

Cloth, Price 2/6.

PART I.—THE ANIMAL KINGDOM.

Elephant—Lion—Tiger—Bear—Wolf—Beaver—Ilama—Reindeer—Camel—Fox—Horse—Chameleon—Crocodile—Ostrich—Cuckoo—Woodpecker—Birds—Whale—Cod—Anchovy—Rattlesnake—Spiders—Snail—Silkworm—Hive—Bees.

PART II.—THE VEGETABLE KINGDOM.

Potato—Mahogany Tree—Cocoa nut Tree—Flax—Tea Plant—Cacao, or Chocolate Tree—Rice Plant—Caoutchouc Tree—Mushroom—Sugar Cane—Coffee Tree—Cork Tree—Cotton Plant.

PART III.—THE MINERAL KINGDOM.

Gold—Iron—Silver—Tin—Coal—Salt—Lead—Slate—Chalk.

PART IV.—MISCELLANEOUS.

Lead Pencil—Sealing Wax—China Tea Cup—Needle—Straw Bonnet—Candle—Paper-Making—Books—Looking Glass—A Bed—Glass—Pins—Bones—Feet of Animals—Tails of Animals—Teeth—Dew—Thermometer—Barometer—Common Pump—Diving Bell.

SECOND SERIES.

Cloth, Price 2/6.

PART I.—PHYSIOLOGY.

Build of the Human Body—Human Skeleton—Vessels of the Human Body—Blood, and its Uses—Structure of the Heart—Circulation of the Blood—Respiration—Skin and its Uses—How the Body is Nourished: Chymification, Chylification—Absorption and Defecation—Muscles—Joints—Seeing: Structure of the Eye, How we See, Various Explanations—Hearing, Structure of the Ear—Smelling—Feeling—Tasting—Structure of Human Nails and Hair.

PART II.—PHYSICAL GEOGRAPHY.

Formation of Mountains and their Uses—Earthquakes—Volcanoes—Atmosphere and its Uses—Winds—Clouds—Ocean, its Divisions and Physical Features; Waves, Tides, Currents—Gulf Stream—Springs—Rivers—Lakes—Causes which determine Climate—Snow and Hail—Glaciers and Icebergs—Coral Formation.

PART III.—MANUFACTURES.

Glue—Carpets—Cutlery—Leather—Nails—Buttons—A Beaver Hat—Butter—Cheese—Brewing.

PART IV.—MISCELLANEOUS.

Tobacco—Malt and Hops—The Vine—Spices—Loaf of Bread—Balloons—Mechanical Powers; Lever, Wheel and Axle, Pulley, Inclined Plane, Wedge, Screw—Timber and its Uses—Lightning and Thunder—Lightning Conductor.

Each of the Lessons is divided into two columns, viz., MATTER and METHOD; the former containing the information to be imparted, whilst the latter is intended not to be dogmatically adhered to, but to serve as a specimen of the various expedients to which Teachers may resort.

The above Two Series are also bound in One Volume, Cloth, 4/6; or the Complete Book, interleaved with Ruled Paper, Cloth, 6/6.

London: Jarrold and Sons, 10 and 11, Warwick Lane.

Jarrold's Teachers' and Pupil Teachers' Series.

NOTES OF LESSONS.

FIRST SERIES.

For Infant Classes & Standard I., 2/6 For the Upper Standards - 3/6.

SECOND SERIES.

COMPLETE IN ONE VOLUME, 5/6.

Copy of Letter from the Principal of one of the Training Colleges.

"Dear Sir,—I thank you for the 'Notes of Lessons.' As Models of Notes of Lessons, they are likely to prove useful to Pupil Teachers, and other young Teachers, provided they use them as Models of what Notes of Lessons should be, and do not use them as notes from which to teach. Their special value is the abundance of Illustration, showing how most common objects may be represented by drawings in outline, the work of a second or two in the hands of a fairly good draughtsman. *The style of the Illustrations is in harmony with the instructions issued lately from the Education Department on the subject of Black Board drawing,* and should therefore be useful to intending Candidates for 'Black Board.' This collection of Notes is decidedly in advance of any I have seen, and is the production of a worthy disciple of Comenius, the ardent advocate of pictorial teaching."

NOTES OF LESSONS

ENGLISH GRAMMAR.

FOR THE USE OF TEACHERS IN ELEMENTARY SCHOOLS.

Crown 8vo, Cloth, 2/6.

The requirements in English from Children in Elementary Schools have led to the Preparation of these "Notes," which, it is believed, will be found more practical in their application than the ordinary useful text-books on English Grammar.

The lessons have been carefully graduated, amply illustrated, and made as thoroughly comprehensive of the subjects treated on as it is thought desirable.

It must be observed that the whole of any one lesson may be not necessarily given at one time, but continued on subsequent occasions. The number of "Steps" of any lesson to be taken at any one time will depend upon the duration of the lesson, the ability of the teacher, and the general intelligence of the children.

It is hoped that teachers will not confine themselves to the examples for Parsing, Analysis, &c., that are here given, but they will select others which they may consider suitable, illustrative of the instruction which is being imparted.

It is not, of course, desirable that every lesson should be given to every standard. The teacher will be guided in his selection of the lessons by the First Schedule of the New Code, and the state of efficiency of the class to be taught.

London: Jarrold and Sons, 10 and 11, Warwick Lane.

Jarrold's Teachers' and Pupil Teachers' Series.

PRACTICAL HELP FOR INFANTS' TEACHERS.

189 pages. 94 Illustrations. Price Three Shillings.

APPROPRIATE & VARIED OCCUPATIONS FOR INFANTS.

IMPORTANT FOR INFANT-CLASS TEACHERS,

217 Illustrations. Price Three Shillings.

PREFACE:—The requirements of the present Elementary Education Code, Art. 106, (b) (3), have urged to the preparation and publication of the following Notes and Exercises, with the aid of which, it is hoped, the difficulties of providing "Appropriate and Varied Occupations" by all teachers of Infant Children will be no longer apparent.

Throughout the whole course, as here arranged, considerable Kindergarten principles are introduced, but such only as might be successfully taught by a teacher of average tact and ingenuity, without special training in the "gifts," and at a very moderate expense.

The provision of occupations does not claim to be exhaustive, nor yet the mode of treatment complete only as a suggestive exposition.

In practice, the graduated courses as offered in the First Part of the book should receive prior attention, and occupations as associated with Object Lessons should be pursued only after tolerable skill in manipulation, etc., has been acquired.

In the Second Part of the book, subjects barely outlined for "Conversational lessons on objects and phenomena of nature and common life" are arranged in alphabetical order, and appropriate occupations associated therewith, suggested. The number, both of lessons and associated occupations, is largely in excess of a year's requirements, but the teacher will, of course, exercise her discretion in selection, being influenced in her choice by the size, staff, standing, and other controlling circumstances of her school.

OCCUPATIONS & OCCUPATION GAMES.

A Sequel to "Appropriate and Varied Occupations."

293 Illustrations. Price Three Shillings.

London. Jarrold and Sons, 10 and 11, Warwick Lane.

THE EMPIRE EDUCATIONAL SERIES.

THE
TEMPERANCE SCIENCE
READING BOOK.

*By JOHN TOPHAM, Certificated Master ;
School Lecturer for the United Kingdom Band of
Hope Union.*

Crown Svo, 245 pages, Many Illustrations,
Strongly Bound, 1/6.

The "Educational News" says :— "The book is a trustworthy work on the subject ; well-arranged, excellently illustrated, and sensibly written. It is plain, informing, and thoroughly interesting as a reading book for schools."

The "Scholastic Globe" says :— "We wish that the book might speedily find an entrance into every school in the kingdom : the benefit that would accrue to the cause of temperance is incalculable."

The "British Temperance League" says :— "Several Temperance Readers have been issued, and they have been welcomed by different portions of the people interested in the education of the children. We do not think a better one than this has been issued, and we would recommend all Band of Hope workers to secure a copy."

The "Temperance Work" says :— "It is intended principally to be used in day schools as a Temperance text-book, but parents will do well if they obtain it for their children's home reading. While exceedingly instructive, it also possesses all the charm of a story book."

London: Jarrold & Sons, 10 & 31, Warwick Lane.

